CITY OF NEWTON
PURCHASING DEPARTMENT

CONTRACT FOR NEWTON FIRE DEPARTMENT

PROJECT MANUAL:

SUPPLY AND DELIVER
ENGINE #4 - PUMPER FIRE TRUCK

INVITATION FOR BID #10-24

OCTOBER 2009

DAVID B. COHEN, MAYOR

CITY OF NEWTON
PURCHASING DEPARTMENT
INVITATION FOR BID No. 10-24

The City of Newton invites sealed bids from Contractors for:

SUPPLY & DELIVER OF (1) ENGINE #4 - PUMPER FIRE TRUCK
(F.O.B. NEWTON, MA)

Bids will be received until: **10:00 a.m., November 13, 2009**
at the Purchasing Department, Room 204, Newton City Hall, 1000 Commonwealth Ave., Newton, MA 02459. Immediately following the deadline for bids all bids received within the time specified will be publicly opened and read aloud.

Contract Documents will be available online at **www.ci.newton.ma.us/bids** or for pickup at the Purchasing Department after: **10:00 a.m., October 29, 2009.** There will be no charge for contract documents.

The City is looking for bids for a new and unused Fire Pumper truck. The said vehicle and equipment shall be delivered by the company within approximately **90 calendar days** following receipt of this award.

All bids must be accompanied by a bid deposit in an amount that is not less than five percent (5%) of the value of the bid, including all add alternates. Bid deposits, payable to the City of Newton, shall be either in the form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company. The successful bidder will be required to furnish a **Performance Bond in the amount of 100% of the contract total.**

It is Bidder's responsibility to ensure its bid is submitted by the deadline for acceptance. Any bid received after the time for receipt established in this Invitation will be returned unopened. All bids are subject to the provisions of M.G.L. Chapter 30B. Award shall be made to lowest responsive and responsible bidder.

"Equality" - An item equal to that named or described in the specifications of the contract may be furnished by the Vendor and the naming of any commercial name, trademark or other identification shall not be construed to exclude any item or manufacturer not mentioned by name or as limiting competition but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design; (2) it will perform at least equally the function imposed by the general design for the work being contracted for or the material being purchased; and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the specifications. The name and identification of all materials other than the one specifically named shall be submitted to the City in writing for approval, at time of bid, use or fabrication of such items. Subject to the provisions of M.G.L., Ch. 30, Sec. 39J, approval shall be at the sole discretion of the City, shall be in writing to be effective, and the decision of the City shall be final. The City may require tests of all materials so submitted to establish quality standards at the Vendor's expense. All directions, specifications and recommendations by manufacturers for installation, handling, storing, adjustment and operation of their equipment shall be complied with; responsibility for proper performance shall continue to rest with the Vendor.
All bids shall be submitted as one ORIGINAL and one COPY.

Some City of Newton bids are available on the City's web site, **www.ci.newton.ma.us./bids,** Invitation for Bid. It is the sole responsibility of the contractor downloading these bids to ensure they have received any and all addenda prior to the bid opening. Addenda's will be available online within the original bid document as well as a separate file. If you download bids from the internet site and would like to make it known that your company has done so, you may fax the Purchasing Dept. (617) 796-1227 or email **purchasing@newtonma.gov** with your NAME, ADDRESS, PHONE, FAX AND INVITATION FOR BID NUMBER.

The City of Newton reserves the right to waive any informalities in any or all bids, or to reject, in part or in whole, any or all bids, if it be in the public interest to do so.

CITY OF NEWTON

Re Cappoli
Chief Procurement Officer
October 29, 2009

CITY OF NEWTON

DEPARTMENT OF PURCHASING

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - BIDDER'S REPRESENTATION

1.1 Each General Bidder (hereinafter called the "Bidder") by making a bid (hereinafter called "bid") represents that:

1. The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.

2. The Bidder has visited the site and is familiar with the local conditions under which the Work has to be performed.

1.2 Failure to so examine the Contract Documents and site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - REQUEST FOR INTERPRETATION

2.1 Bidders shall promptly notify the City of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.

2.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the *Chief Procurement Officer*, at **purchasing@newtonma.gov** or via facsimile (617) 796-1227. The City will answer such requests if received seven (7) calendar days before the date for receipt of the bids.

2.3 Interpretation, correction, or change in the Contract Documents will be made by Addendum which will become part of the Contract Documents. The City will not be held accountable for any oral instruction.

2.4 Addenda will be faxed or mailed First Class postage by the USPS, to every individual or firm on record as having taken a set of Contract Documents.

2.5 Copies of addenda will be made available for inspection at the location listed in the Invitation for Bids where Contract Documents are on file, in addition to being available online at **www.ci.newton.ma.us/bids**.

2.6 Bidders downloading information off the internet web site are soley responsible for obtaining any addenda prior to the bid opening. If the bidder makes themselves known to the Purchasing Department, at **purchasing@newtonma.gov** or via facsimile (617) 796-1227, they shall be placed on the bidder's list. Bidders must provide the Purchasing Dept. with their company's name, street address, city, state, zip, phone, fax and **INVITATION FOR BID NUMBER 10-24.**

ARTICLE 3 - PREPARATION AND SUBMISSION OF BIDS

3.1 Bids shall be submitted on the "Bid Form" as appropriate, furnished by the City and shall include a firm fee FOB Delivered.

3.2 All entries on the Bid Form shall be made by typewriter or in ink.

3.3 Any quantities indicated on the Bid Form or elsewhere in the Project Manual or Drawings are estimates only and are given solely as a basis for the comparison of bids. The City does not by implication or otherwise guarantee them to be even approximately correct. The Contractor shall have no claim for additional compensation, or refuse to do the work called for, by reason of the actual quantities involved being greater or lesser by any amount than those called for in the proposal.

3.4 Where so indicated on the Bid Form, sums shall be expressed in both words and figures. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.

3.5 All proposals which contain abnormally high prices, or abnormally low prices, for any class of work, or those which contain unbalanced bidding in any form or manner may be rejected as informal.

3.6 Bid Deposits shall be submitted in the amount specified in the Invitation for Bids. They shall be made payable to the City of Newton and shall be either in the form of cash, certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or a bid bond issued by a surety licensed to do business in the Commonwealth of Massachusetts; and shall be conditioned upon the faithful performance by the principal of the agreements contained in the bid.

Bid deposits of the three (3) lowest responsible and eligible Bidders shall be retained until the execution and delivery of the Owner/Contractor agreement.

3.7 The Bid, including the bid deposit shall be enclosed in a sealed envelope with the following plainly marked on the outside:

* GENERAL BID FOR:

* NAME OF PROJECT AND INVITATION NUMBER

* BIDDER'S NAME, BUSINESS ADDRESS, AND PHONE NUMBER

3.8 Date and time for receipt of bids is set forth in the Invitation for Bids.

3.9 Timely delivery of a bid at the location designated shall be the full responsibility of the Bidder.

ARTICLE 4 - ALTERNATES

4.1 Each Bidder shall acknowledge Alternates (if any) in Section C on the Bid Form.

4.2 In the event an Alternate does not involve a change in the amount of the base bid, the Bidder shall so indicated by writing "No Change", or "N/C" or "0" in the space provided for that Alternate.

4.3 Bidders shall enter on the Bid Form a single amount for each Alternate which shall consist of the amount for work performed by the Contractor.

4.4 The low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

ARTICLE 5 - WITHDRAWAL OF BIDS

5.1 Any bid may be withdrawn prior to the time designated for receipt of bids on written or telegraphic request. Telegraphic withdrawal of bids must be confirmed over the Bidder's signature by written notice postmarked on or before the date and time set for receipt of bids.

5.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.

5.3 No bids shall be withdrawn for sixty days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

ARTICLE 6 - CONTRACT AWARD

6.1 The City of Newton will award the contract to the lowest responsive and responsible Bidder within sixty days, Saturdays, Sundays, and legal holidays excluded after the opening of bids.

6.2 The City of Newton reserves the right to waive any informalities in or to reject any or all Bids if it be in the public interest to do so.

6.3 As used herein, the term "lowest responsive and responsible Bidder" shall mean the Bidder (1) whose bid is the lowest of those bidders whose bid conforms in all respects to the Invitation for Bids and who has the capability to perform fully the contract requirements, and the integrity and reliability which assures good faith performance; (2) who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who, where the provisions of section eight B of chapter twenty-nine apply, shall have been determined to be qualified thereunder.

6.4 It is the purpose of the City not to award this contract to any bidder who does not furnish evidence satisfactory to the Chief Procurement Officer that he has the ability and experience in this class of work and that he has sufficient capital and plant to enable him to prosecute the same successfully and to complete it within the specified time and that he will complete it in accordance with the terms thereof.

6.5 Subsequent to the award and within five (5) days, Saturday, Sundays and legal holidays excluded, after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the City a Contract in the form included in the Contract Documents in such number of counterparts as the City may require.

6.6 In the event that the City receives low bids in identical amount from two or more responsive and responsible Bidders, the City shall select the successful Bidder by a blind selection process such as flipping a coin or drawing names from a hat. The low Bidders who are under consideration will be invited to attend and observe the selection process.

ARTICLE 7 - TAXES

7.1 The Bidder shall not include in this bid any tax imposed upon the sale or rental of tangible personal property in this Commonwealth, such as any and all building materials, supplies, services and equipment required to complete the work.

7.2 The City is exempt from payment of the Massachusetts Sales Tax, and the Bidder shall not include any sales tax on its bid. The City's exemption Number is E-046-001-404.

END OF SECTION

CITY OF NEWTON

DEPARTMENT OF PURCHASING

BID FORM
#10-24

A. The undersigned proposes to supply and deliver the materials and/or equipment and/or supplies specified below in full accordance with the Contract Documents and Project Manual supplied by the City of Newton entitled:

SUPPLY AND DELIVER
ENGINE #4 - PUMPER FIRE TRUCK
(F.O.B. NEWTON, MA)

for the contract price(s) specified below, subject to additions and deduction according to the terms of the specifications.

B. This bid includes addenda number(s) _____, _____, _____, _____,

C. The Bidder proposes to furnish and deliver the materials specified at the following price(s) FOB Delivered Newton, MA:

SUPPLY AND DELIVER (F.O.B. NEWTON, MA)
ENGINE #4 - PUMPER FIRE TRUCK

$_____

COMPANY:_____

State Delivery Time (number of calendar days after receipt of order):_____

D. The undersigned has completed and submits herewith the following documents:

- ❑ Bid Form (2 pages);
- ❑ Bidder's Qualification Form and References;
- ❑ A five percent (5%) bid deposit/bid guarantee.

E. The undersigned agrees that, if selected as contractor, s/he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the City of Newton, execute a contract in accordance with the terms of this bid. The undersigned hereby certifies that s/he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that's/he will comply fully with all laws and regulations applicable to awards made subject to M.G.L. Chapter 30B. The successful bidder will be required to furnish a Performance Bond each in the amount of 100% of the contract total.

The undersigned further certifies under the penalties of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this section the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from public contracting or subcontracting in the Commonwealth under the provisions of M.G.L. Chapter 29, Section 29F or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date _____

_____
(Name of Bidder)

BY: _____

_____
(Printed Name and Title of Signatory)

_____
(Business Address)

_____
(City, State Zip)

_____
(Telephone & FAX)

_____
(E-mail address)

NOTE: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses of all partners; if an individual, give residential address if different from business address; and, if operating as a d/b/a give full legal identity. Attach additional pages as necessary.

END OF SECTION

City Of Newton Fire Department
1164 Centre Street
Newton , Massachusetts 02459

SPECIFICATIONS FOR ONE 1500 GPM TRIPLE COMBINATION PUMPER

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of a complete fire apparatus. These detailed specifications cover the requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor. The manufacturer shall provide loose equipment only when specified by the customer. Otherwise, in accordance with NFPA 1901, 2009 edition, the proposal shall specify whether the fire department or apparatus dealership shall provide required loose equipment.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts.

Each bid shall be accompanied by a detailed set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed, and to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all component parts and equipment.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units which require periodic maintenance; ease of operation (including both pumping and driving); and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements". Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair. All steel welding shall follow American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding shall follow American Welding Society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding shall follow American Welding Society B2.1-2000 requirements for structural welding of sheet metal. Flux core arc welding to use alloy rods, type 7000, American Welding Society standards A5.20-E70T1. Employees classified as welders are tested and certified to meet American Welding Society codes upon hire and every three (3) years thereafter. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

DELIVERY

Apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own power** - rail or truck freight shall not be acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered.

INFORMATION REQUIRED

The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

SAFETY VIDEO

Documentation provided at the time of delivery shall also include an apparatus safety video, in DVD format. This video shall

address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included: vehicle pre-trip inspection, chassis operation, pump operation, and maintenance.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters:

A) The apparatus, when fully equipped and loaded, shall have not less than 25% nor more than 50% of the weight on the front axle, and not less than 50% nor more than 75% on the rear axle.

B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.

C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

SPECIFICATION BID REQUIREMENTS

Bidders shall also indicate in the "yes/no" column if their bid complies **on each item** (PARAGRAPH) specified. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page.

Proposals taking total exception to specifications shall not be acceptable.

Also, bidders shall submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. **An exception to these requirements shall not be tolerated.**

EXCEPTIONS

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

GENERAL CONSTRUCTION

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Each Occurrence	$1,000,000
Products/Completed Operations Aggregate	$1,000,000
Personal and Advertising Injury	$1,000,000

General Aggregate $5,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall include owner as an additional insured when required by written contract.

COMMERCIAL AUTOMOBILE LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile liability insurance:

Each Accident Combined Single Limit: $1,000,000

Coverage shall be written on a Commercial Automobile liability form.

UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate: $25,000,000
Each Occurrence: $25,000,000

The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the Bidder's General Liability, Automobile Liability and Employer's Liability policies. Owner shall be included as an additional insured on the General Liability policy when required by written contract.

The required limits can be provided by one or more policies provided all other insurance requirements are met.

Coverage shall be provided by a carrier(s) rated A- or better by A.M. Bests.

Bidder agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with its bid. The certificate shall show the purchaser as certificate holder. The Certificate of Insurance shall provide the following cancellation clause: Should any of the above described polices be cancelled before the expiration date thereof, the issuing insurer shall endeavor to mail 30 days written notice to the certificate holder named to the left, but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives.

ISO COMPLIANCE

The manufacturer shall operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the "International Organization for Standardization (ISO)" specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.

SINGLE SOURCE MANUFACTURER

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab and body being fabricated and assembled on the bidder's premises. The warranties relative to the chassis and body design (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis). The bidder shall provide evidence that they comply with this requirement.

NFPA 2009 STANDARDS

This unit shall comply with the NFPA standards effective January 1, 2009, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus.

A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company shall designate, in writing, who is qualified to witness and certify test results.

NFPA COMPLIANCY

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA".

TOTAL VEHICLE ASSESSMENT CERTIFICATION

The apparatus shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1901 standards. The certification includes: all design, production, operational, and performance testing of the apparatus. (no exception)

PUMP TEST

The pump shall be tested, approved, and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

GENERATOR TEST

If the unit has a generator, the generator shall be tested, approved, and certified by Underwriters Laboratories at the manufacturer's expense. The test results shall be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST

If the unit has breathing air, Underwriters Laboratories shall draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*

INSPECTION TRIP(S)

The bidder shall provide two (2) factory inspection trip(s) for Three members of the Newton fire Department customer representative(s). The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals shall be the responsibility of the bidder.

CUSTOMER SERVICE WEBSITE

A Customer Service website shall be provided which offers the dealer and customer access to comprehensive information pertaining to the maintenance and service of the apparatus. The website shall consist of the following features:

- Ability for the dealer to access to truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc.

- Parts look-up capability for items sourced by the fire apparatus manufacturer

- Ability to allow the dealer to submit electronically a parts order and warranty claims

- Ability to information to allow the dealer to maintain communication with the customer on the status of orders, claims, and phone contacts

- Access to all currently published Operation and Maintenance Manuals, Service Publications, Service Bulletins and Work Instructions

- Ability to allow the dealer access to applicable on-line diagnostic software

- Access to upcoming training classes offered by the fire apparatus manufacturer

- Access to interactive electronic learning modules, covering the operation of major vehicle components

- Access to training manuals used in the fire apparatus manufacturers training classes

- Access to Customer Service Articles, Corporate News, Quarterly Newsletters, and Key Contacts within the Customer Service Department

APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

WARRANTY

Each piece of new fire or rescue apparatus shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply, as a part of their bid package, a copy of the warranty or warranties that they propose to provide, and in no case shall it be less than one (1) year on the entire apparatus.

All other warranties, as outlined in these specifications shall be provided in writing as a part of the bid package.

Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package.

WARRANTY 1 YEAR CUSTOM CHASSIS

Each piece of new fire or rescue apparatus shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply, as a part of their bid package, a copy of the warranty or warranties that they propose to provide, and in no case shall it be less than one (1) year on the entire apparatus.

All other warranties, as outlined in these specifications shall be provided in writing as a part of the bid package.

Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package.

CROSSMEMBERS WARRANTY

A one (1) year parts and labor warranty shall be provided on all chassis frame crossmembers.

BID BOND

All bidders shall provide a bid bond as security for the bid in the form of a 5% bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Proposals received from bidders who do not manufacture the chassis shall provide a warranty that shall be issued jointly and severally by, and signed by, both the bidder and the chassis manufacturer.

If the successful bidder does not manufacture the chassis, the bidder shall supply a warranty bond, in addition to their performance bond, along with their signed contract. This warranty bond shall guarantee all terms and conditions of the Basic One (1) Year Limited Warranty and names both the bidder and chassis manufacturer as co-principals. This warranty bond shall be issued for the contract amount and shall remain in force for a term which is consistent with the term of the Basic One (1) Year Limited Warranty.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.

PERFORMANCE BOND

The successful bidder shall provide, within thirty (30) days after award of contract, and along with a signed copy of the contract, a performance bond, which guarantees performance of all terms and conditions of the contract and of the Basic One (1) Year Limited Warranty agreement. The performance bond shall specifically cover the performance of the contract according to its terms and conditions, as well as payment of all related bills and encumbrances. This performance bond shall be issued by a surety company who is listed by the U.S. Treasury Department's list of approved sureties, as published in Circular 570, as of the bid date. The performance bond shall be issued in an amount equal to 100% of the contract amount and shall be

dated concurrent to, or subsequent to, the date of the contract.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.

SERVICE CENTER

In order to minimize out of service time the bidder shall have the capability to repair all major components with out of the need to transport the apparatus to other locations. The bidder shall maintain a factory authorized service center with in 50 miles of the Newton Fire Department. The service center shall have the following minimum qualifications:

1. Minimum 10 years of continuous ownership and management
2. Total in house body shop capability
3. Minimum 40 foot down draft paint booth with environmental approval
4. Pump mechanics certified by the pump manufacturer
5. Automotive electricians trained by the apparatus factory
6. PRO-LINK 9000 analytical device with current software
7. Lap top shop computer with current multiplrx analytical software and wireless modem for direct truck to factory communication
8. Full time body repair and automotive paint staff
9. Certified Master ASE and EVT Technicians
10. Warranty center for Caterpillar, Cummins, Detroit Diesel, Allison Transmission, Hendrickson, Meritor, Waterous, and Hale Fire pumps
11. Computerized parts listing
12. Aerial and hydraulic repair specialists
13. 24 hour road & Towing service vehicle
14. VIS Check Diagnostic analyzer for driveline inspections
15. DOT & Massachusetts Inspections station
16. Hunter Laser truck Alignment System
17. Robinair Air Conditioning Analyzer
18. Massachusetts certified Air Conditioning Technician

Current Certifications shall be furnished at time of bid (No EXCEPTIONS)

TRAINING

A qualified training engineer shall be provided by the bidder. The training engineer shall instruct the Newton Fire Department personnel in the operation and maintenance of the chassis for a period of not less then **FOUR (4) days.**

CONTRACT

The contract for the specified apparatus shall be directly with the
City OF NEWTON Massachusetts and the manufacturer. Contracts with dealers or representatives of the manufacturer will not be executed.

Any potential to utilize progress payment discounts must be defined clearly in the bidders proposal.
All bidders shall furnish a financial statement to show that they have been a profitable corporation.

CHASSIS

Chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength, capacity for the intended load to be sustained, and the type of service required. The chassis shall be the manufacturer's heavy-duty line tilt cab.

SEATING CAPACITY

The seating capacity in the cab shall be five (5).

WHEELBASE

The wheelbase of the vehicle shall be no greater than 188.50".

GVW RATING

The gross vehicle weight rating shall be a minimum of 43,500#.

FRAME

The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails shall have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail shall have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 inch-pounds over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 inch-pounds over the rear axle. The frame rails shall be constructed of 120,000 psi yield strength heat-treated .38" thick steel, with 3.50" wide flanges.

FRAME RAIL WARRANTY

The frame rails shall be guaranteed for the **life of the vehicle,** which is estimated to be 50 years, against defects in design, material, or workmanship, excluding accident or abuse. A copy of the fire apparatus manufacturer's warranty shall be included with the bid.

FRAME REINFORCEMENT

In addition, a mainframe inverted "L" liner shall be provided. It shall be heat-treated steel measuring 12.00" x 3.00" x .25". Each liner shall have a section modulus of 7.795 cu. in., yield strength of 110,000 psi, and rbm of 857,462 inch-pounds. Total rbm at wheelbase center shall be 3,976,502 pounds per rail.

The frame liner shall be mounted inside of the chassis frame rail, beginning at the front edge of the mainframe rail and extending to the rear cab crossmember.

FRONT NON DRIVE AXLE

The front axle shall be of the independent suspension design with a ground rating of 19,500 pounds.

Upper and lower control arms shall be used on each side of the axle. Upper control arm castings shall be made of 100,000-psi yield strength 8630 steel and the lower control arm casting shall be made of 55,000-psi yield ductile iron.

The center cross members and side plates shall be constructed out of 80,000-psi yield strength steel.

Each control arm shall be mounted to the center section using elastomer bushings. These rubber bushings shall rotate on low friction plain bearings and be lubricated for life. Each bushing shall also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There shall be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm shall be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Camber at load shall be zero degrees for optimum tire life.

The kingpin bearing shall be of low friction design and be sealed for life.

Toe links that are adjustable for alignment of the wheel to the center of the chassis shall be provided.

The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage shall provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle shall have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels shall not infringe on this cramp angle.

FRONT NON DRIVE AXLE WARRANTY

The non drive axle system shall have a **three (3) year** parts and labor warranty. This warranty applies to the suspension components only. All steering linkages, pumps etc., are covered under our standard chassis warranty (exception steer gears - see Steering for warranty).

OIL SEALS

Oil seals with viewing window shall be provided on the front axle.

SHOCK ABSORBERS
Heavy-duty telescoping shock absorbers (KONI) shall be provided on the front suspension.

REAR AXLE
The rear axle shall be a Meritor™, Model RS-24-160, with a capacity of 24,000 pounds.

REAR AXLE WARRANTY
The Meritor™ **two (2) year, unlimited mileage, parts and labor** warranty shall be provided with this axle.

TOP SPEED OF VEHICLE
A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 68 MPH.

OIL SEALS
Oil seals shall be provided on the rear axle.

FRONT SUSPENSION
Front independent suspension shall be provided with a minimum ground rating of 19,500 pounds.

The independent suspension system shall be designed to provide maximum ride comfort. The design shall allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel shall have torsion bar type spring. In addition, each front wheel end shall also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design shall be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension shall have been put through a durability test that simulated a minimum of 140,000 miles of inner city driving.

REAR SUSPENSION
The rear springs shall be Standens semi-elliptical, 3.00" x 52.00", 10 leaves with a ground rating of 24,000 pounds. Spring hangers shall be castings with provisions for lubrication. The grease fittings shall be 90-degree type and shall be accessible without removing the wheels or cutting any sheet metal. Two (2) top leaves shall wrap the forward spring hanger pin and the top leaf shall wrap the rear spring hanger pin on both the front and rear suspensions.

Kaiser spring pins shall be provided, with double "figure-eight" grease grooves and a layer of electroless nickel plating, 1.0 mil thick, around the entire pin. The bushing that holds the spring pin in place shall also have a grease groove.

TURNING RADIUS REPORT
Supplied with the bid shall be a turning radius analysis of the vehicle being proposed. This analysis shall provide the inside turning radius, the outside turning radius, the curb to curb turning radius, and the wall to wall turning radius.

ANTI-LOCK BRAKE SYSTEM
The vehicle shall be equipped with a Wabco 4S4M, anti-lock braking system. The ABS shall provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit then shall reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

ANTI-LOCK BRAKE SYSTEM WARRANTY
The Wabco ABS system shall come with a **three (3) year or 300,000 mile parts and labor** warranty provided by Meritor Wabco Vehicle Control Systems.

BRAKES
The service brake system shall be full air type.

The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system shall be certified, third party inspected, for improved stopping distance.

The rear brakes shall be Meritor™ 16.50" x 7.00" cam operated with automatic slack adjusters.

ENGINE BRAKE
A Jacobs Engine Brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting.

The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system shall automatically disengage the auxiliary braking device, when required.

AIR COMPRESSOR, BRAKE SYSTEM
The air compressor shall be a Bendix BA-921 with 15.8 cubic feet per minute output at 1250 RPM.

BRAKE SYSTEM
The brake system shall include:

- Bendix-Westinghouse dual brake treadle valve with vinyl covered foot surface

- A heated automatic moisture ejector on air dryer

- Total air system capacity of 4,362 cubic inch

- Two (2) air pressure gauges with red warning light and audible alarm, that activates when air pressure falls below 60 psi

- MGM spring set parking brake system

- Parking brake operated by a Bendix-Westinghouse PP-1 control valve

- A parking "brake on" indicator light on instrument panel

- Bendix-Westinghouse SR-1 valve, in conjunction with a double check valve system, shall be provided with an automatic spring brake application at 40 psi

- Wabco System Saver 1200 air dryer

BRAKE LINES
Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

AIR INLET
One (1) air inlet with male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver side lower step well of cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female coupling shall also be provided with the loose equipment.

ENGINE
The chassis shall be powered by a Detroit Diesel electronically controlled engine as described below:

- Model: Series 60, 14.0L (855 cubic inches)

- Maximum Horsepower: 470 bhp at 1800 rpm

- Peak Torque: 1650 lb-ft at 1200 rpm

- Governed Speed: 2000 rpm

- Bore and Stroke: 5.24" x 6.61"

- Number of Cylinders: Six (6)

- Compression Ratio: 17.25:1

Standard equipment on the engine shall include the following:

- Governor: Limiting speed type

- Injectors: Cam operated, unit type, clean tip

- Starting Motor: 12-volt

- Turbocharger

- Air To Air Aftercooled

- Lube Oil Cooler

- Lube Oil Filter: Full flow

- Air Cleaner: Farr or equal

- Fuel Filters: Dual, with check valve

- Coolant Filter: Spin-on with shut off valves on the supply and return line (precharged with coolant inhibitor)

ENGINE WARRANTY
The engine shall come with a **five (5) year or 100,000 mile** warranty provided by the Detroit Diesel Corporation.

CONTROLS AND INDICATOR LIGHTS
The following amber indicator lights shall be located on the driver's side of the cab to denote engine information:
- Diesel Particulate Filter (DPF)
- High Exhaust Temperature (HET)
- Malfunction Indicator Lamp (MIL)

A switch to initiate the diesel particulate filter regeneration cycle shall be located on the driver's side instrument panel.

ENGINE INSTALLATION CERTIFICATION
The fire apparatus manufacturer shall provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of bid.

ENGINE AIR INTAKE
The air intake with an ember separator shall be mounted high on the passenger side of the cab, to the front of the crew cab door. The ember separator is designed to prevent road dirt and recirculating hot air from entering the engine.

The ember separator shall be easily accessible through a hinged stainless steel grille, with one (1) flush quarter turn latch.

EXHAUST SYSTEM
The exhaust system shall be stainless steel from the turbo to the inlet of the diesel particulate filter and shall be 5.00" in diameter. The exhaust system shall include a diesel particulate filter and a diesel oxidation catalyst to meet current EPA standards. The exhaust shall terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. An insulation wrap shall be provided on the exhaust pipe between the turbo and DPF inlet to minimize the transfer of heat to the cab. Heat deflector shields shall be provided to isolate chassis

and body components from the heat of the tailpipe diffuser.

EXHAUST MODIFICATION

The exhaust pipe shall be brought out from under the body at a 90 degree angle from the truck. The tail pipe shall extend a minimum of 2.00" past the body, adaptable for the Plymovent system. The diameter of the pipe shall be 7.00". There shall be a clearance of 4.00" completely around the pipe once past the side of the body. A stop shall be provided on the tail pipe that shall prevent the nozzle from sliding too far on.

HIGH IDLE

A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. A switch shall be installed, at the cab instrument panel, for activation/deactivation.

The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle".

COOLANT LINES

Silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.

Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum cooling performance, the radiator core shall be made of copper fins having a serpentine design, soldered to brass tubes. The tubes shall be welded to brass headers using the patented "Beta-Weld" process for increased strength, longer road life and solder-bloom corrosion protection. The radiator core shall have a minimum frontal area of 1396 square inches. Steel supply and return tanks shall be bolted to the core headers and steel side channels to complete the radiator assembly. The radiator shall be compatible with commercial antifreeze solutions.

The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

The radiator shall include an integral deaeration tank, with a remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

CLUTCH FAN

A Horton fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" and "Pump" position.

FUEL TANK

A 75-gallon fuel tank shall be provided and mounted at rear of chassis. The tank shall be constructed of 12-gauge, hot rolled steel. It shall be equipped with swash partitions and a vent.

A .75" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Diesel Fuel Only".

A .50" diameter vent shall be provided running from top of tank to just below fuel fill inlet.

The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume.

All fuel lines shall be provided as recommended by the engine manufacturer.

FUEL SHUTOFF
A shutoff valve shall be installed in the fuel line, on both sides of the fuel filters.

FUEL COOLER
An air to fuel cooler shall be installed in the engine fuel return line.

TRANSMISSION
An Allison Gen IV, model EVS 4000P, electronic, torque converting, automatic transmission shall be provided.

Two (2) PTO openings shall be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge with red light and buzzer shall be installed on the cab instrument panel.

TRANSMISSION SHIFTER
A six (6)-speed push button shift module shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.

The transmission ratio shall be: 1st - 3.49 to 1.00, 2nd - 1.86 to 1.00, 3rd - 1.41 to 1.00, 4th - 1.00 to 1.00, 5th - 0.75 to 1.00, 6th - 0.65 to 1.00, R - 5.03 to 1.00.

TRANSMISSION COOLER
A transmission oil cooler shall be provided in the lower tank of the radiator.

TRANSMISSION WARRANTY
The transmission shall have a **five (5) year/unlimited mileage** warranty covering 100% parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder.

DRIVELINE
Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1810 universal joints.

The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glidecoat or equivalent.

STEERING
Dual Sheppard M110 steering gears, with integral heavy-duty power steering, shall be provided. The power steering shall incorporate a Vickers V20F three (3)-line hydraulic pump with integral pressure and flow control.

The steering wheel shall be:
- 18.00" in diameter
- Capable of tilting and telescoping
- Four (4)-spoke design

STEERING WARRANTY
The steering gear shall have a three (3) year parts and labor warranty.

TIRES
Front tires shall be Michelin 385/65R22.5 radials, 18 ply "all position" XZY 3 tread. The tires shall be mounted on Alcoa 22.50" x 12.25" polished aluminum disc-type wheels with a ten (10) stud, 11.25" bolt circle.

Rear tires shall be four (4) Michelin 12R22.50 radials, 16 ply all season XDN2 tread. The tires shall be mounted on Alcoa 22.50" x 8.25" polished aluminum disc wheels with a ten (10)-stud 11.25" bolt circle.

LUG NUT COVERS
Chrome plated lug nut covers shall be installed on all lug nuts.

WHEEL CHOCKS

There shall be one (1) set(s) of folding Ziamatic SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided.

WHEEL CHOCK BRACKETS
There shall be one (1) set(s) of Ziamatic SQCH-44-H horizontal mounting wheel chock brackets provided for the Ziamatic SAC-44-E folding wheel chocks. The brackets shall be mounted under compartment D3.

HUB COVERS (front)
Stainless steel hub covers shall be provided on the front axle. An oil level viewing window shall be provided.

WHEEL SAFETY BANDS
The following two (2) wheels, located front wheels of truck, shall have the Tyron, Wheel Safety Bands installed. Chassis steering and handling shall be improved when a tire with a band fails.

HUB COVERS (rear)
A pair of stainless steel high hat hub covers shall be provided on rear axle hubs.

MUD FLAPS
Mud flaps shall be installed behind the front and rear wheels of the apparatus.

TIRE PRESSURE MANAGEMENT
There shall be a VECSAFE LED tire alert pressure management system provided that shall monitor each tire's pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire for a total of six (6) tires.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.

CAB
The cab shall be designed specifically for the fire service and manufactured by the chassis builder.

Construction of the cab shall consist of 5052-H32 .125" aluminum welded to extruded aluminum framing.

The cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises. (no exceptions)

The cab shall be 96.00" wide, with an interior width of 87.50".

The forward cab section shall have an overall height (from the cab roof to the ground) of approximately 103.00". The crew cab section shall have a 10.00" raised roof, with an overall cab height of approximately 113.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight and no personnel weight. Larger tires, wheels and suspension shall increase the overall height listed.

The floor to ceiling height inside the crew cab shall be 64.00" in the center and 69.75" in the outboard positions.

The crew cab floor shall measure 44.50” from rear wall to the back side of engine tunnel.

The engine tunnel, at the rearward highest point (knee level), shall measure 50.88" to the back wall.

The crew cab shall be of the totally enclosed design, with access doors constructed in the same manner as the driver and passenger doors.

The cab shall be a full tilt cab style. The engine shall be easily accessible and capable of being removed with the cab tilted. The cab shall be capable of tilting 45 degrees and 90 degrees with crane assist.

The cab shall have three (3)-point rubber mounting and shall be tilted by a hydraulic pump connected to two (2) cab lift cylinders. The cab shall then be locked down by a two (2)-point automatic locking mechanism that actuates after the cab has been lowered.

The cab access steps shall be 23.25" wide, crew cab shall be 21.50” wide x 8.00” minimum depth and shall be the half-height style door, blistered inward at the bottom.

The lower exposed step area at each door location shall be trimmed with aluminum treadplate and have a grip strut insert in the bottom step.

The inside cab steps shall not exceed 18.00" high.

The crew cab entrance shall be a one (1) step design to the cab floor, for easy access.

A 20.00", slip resistant, handrail shall be provided adjacent to all door openings to assist entrance into the cab.

A chrome handrail shall be provided inside each front cab door, for ease of entry.

The cab doors shall be 37.00" wide x 58.50" high.

The crew cab doors shall be 34.25" wide x 67.00" high for easy entry, and located on the side of the cab.

The cab and crew cab doors shall be constructed of extruded aluminum with a nominal material thickness of .125". The exterior skins shall be constructed from .090" aluminum.

All cab and crew cab entry doors shall contain a conventional roll down window.

Flush mounted, chrome plated paddle type door handle shall be provided on the exterior of the cab doors.

All interior cab door handles shall also have flush paddle handles.

The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks as required by FMVSS 206. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed.

The door hinge shall be a stainless steel piano type with a .25" pin.

There shall be double automotive type rubber seals around the perimeter of the door framing and door edges to ensure a weather tight fit.

Full height polished stainless steel scuffplates shall be installed on the inside of all cab doors.

Cab door panels shall be removable without disconnecting door and window mechanisms.

Engine hood side walls shall be constructed of .50" aluminum, top shall be constructed of .19” aluminum and shall be tapered at top to allow for more driver and passenger elbow room.

The engine hood shall be insulated for protection from heat and sound. The noise insulation keeps the DBA level within the limits stated in the current NFPA series 1900 pamphlet. There shall be access, 15.00" wide x 11.25" high, at the rear of the engine tunnel to access the engine fluid checks.

Full circular inner fender liners, in the wheel wells, shall be provided.

Bright aluminum treadplate shall be overlayed on the outside rear wall of the crew cab except for areas that are not typically visible when the cab is lowered.

A curved, safety glass windshield shall be provided, with over 2,754 square inches of clear viewing area.

The cab windshield shall have bright trim inserts in the rubber molding holding the glass in place.

All cab glass shall be tinted.

Economical windshield replacement glass shall be readily available from local auto glass suppliers.

Two (2) smoked Lexan sunvisors, 8.75” x 31.00" long, shall be provided. The sunvisors shall be located above the windshield with one (1) mounted on each side of the cab.

Two (2) Electric windshield wipers with washer shall be provided that meet FMVSS and SAE requirements.

The washer reservoir shall be able to be filled without raising the cab.

A glove box with a drop-down door shall be installed in the front dash panel in front of the officer's position.

CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. The certification states that the cab must meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks

- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks

- Roof Crush

The cab shall be subjected to a roof crush force of 100,000 lbs. This value shall be 450% of the ECE 29 criteria, which must be equivalent to the front axle rating up to a maximum of 10 metric tons.

- Side Impact

The cab shall be subjected to dynamic preload with a 13,275 lb moving barrier is slammed into the side of the cab at 5.5 mph, striking with an impact of 13,000 ft-lbs of energy. This test shall closely represent the forces a cab shall see in a rollover incident.

- Frontal Impact

The cab shall withstand a frontal force produced from 65,200 ft-lbs of energy using a swing-bob type platen.

The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.

There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.

CAB DOOR DURABILITY CERTIFICATION

Robust cab doors help protect occupants. Cab doors shall survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder shall certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

CAB MODIFICATION

The engine tunnel shall be designed to provide maximum occupant space, and required clearance to the engine and related components. The engine tunnel shall include a modification on the passenger side to accommodate the Turbo and related components.

CAB FLOOR

The cab and crew cab flooring shall be constructed with bright aluminum treadplate.

CREW CAB WINDOWS

On each side of the crew cab, a window with tinted glass shall be provided.

LOGO AND CUSTOMER DESIGNATION ON HORN BUTTON

The steering wheel shall have an emblem containing the fire apparatus manufacturer's logo and customer name. The emblem shall have three (3) rows of text for the customer's department name. There shall be a maximum of eight (8) characters in the first row, eleven (11) characters in the second row and eleven (11) characters in the third row.

The first row of text shall be: TBD

The second row of text shall be: TBD

The third row of text shall be: TBD

STORAGE COMPARTMENTS
Provided on each side of the cab, below the cab floor, to the rear of the crew cab access doors, shall be a storage compartment. The compartments shall be 9.50" wide x 13.00" deep x 18.00" high.

The doors shall be of the single pan construction with two (2) flush quarter turn latches. A rubber-covered bumper shall be used as a doorstop.

FENDER CROWNS
Stainless steel fender crowns shall be installed at the cab wheel openings. The fender crowns shall have a radius outside corner that allows the fender crown to extend beyond the side wall of the front tires and also allow the crew cab doors to open fully.

SCUFFPLATE
A brushed stainless steel scuffplate shall be provided on the entire rear vertical surface of the engine tunnel.

DOOR JAM SCUFFPLATES
All cab door jambs shall be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jam.

TRIM BAND (cab face)
A 10.00" band of 22 gauge pattern finish stainless steel trim is to be installed across the front of the cab, from door hinge to door hinge. The trim band shall be centered on the head lights and applied with two-sided tape. A 0.625" self adhesive trim strip shall be applied around the perimeter of the trim band.

MOLDING (on sides of cab)
Chrome molding shall be provided on both sides of cab.

MAP BOX
There shall be one (1) map box(es) with three (3) bins, open from top. The location required shall be Ship loose to be mounted at pick up. The map box(es) shall be divided into three (3) bins, each being 12.50" wide x 3.00" high x 12.00" deep. Each bin shall slant 30 degrees from horizontal. The map box(es) shall be constructed of .125" aluminum and shall be painted to match the cab interior.

CAB LIFT
A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

The hydraulic pump shall have a manual override for backup in the event of electrical failure.

Lift controls shall be on a panel located on the pump panel or front area of the body in a convenient location.

Cab shall be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

A redundant mechanical stay arm shall automatically be engaged once the cab has been fully raised. Before lowering the cab, this device must be disengaged using the stay arm control located near the cab raise/lower switch.

INTERLOCK, CAB LIFT TO PARKING BRAKE
The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position, if the parking brake is released the cab tilt mechanism shall be disabled.

MIRRORS
A Moto Mirror-Plus polished mirror, 7.62" x 13.50" flat glass and a 6.62" x 6.25" convex glass shall be mounted on each side of the front cab doors. Driver and passenger side mirrors shall be heated and adjustable with remote control convenient to the driver.

BUMPER
A one (1) piece, ten (10) gauge, 304-2B type polished stainless steel bumper, a minimum of 10.00" high, shall be attached to a bolted modular extension frame constructed of 50,000 psi tensile steel "C" channel mounted directly behind it to provide adequate support strength.

The bumper shall be extended 19.00" from front face of cab.

Documentation shall be provided, upon request to show that the options selected have been engineered for fit-up and approval for this modular bumper extension. A chart shall be provided to indicate the option locations and shall include, but not be limited to the following options: air horns, mechanical sirens, speakers, hose trays (with hose capacities), winches, lights, discharge, and suction connections.

LIFT AND TOW MOUNTS
Mounted to the frame extension shall be lift and tow mounts. The lift and tow mounts shall be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes shall be painted the same color as the frame.

HOSE TRAY
A hose tray, constructed of aluminum, shall be placed in the center of the bumper extension.

The tray shall have a capacity of 150' of 1.50" double jacket cotton-polyester hose.

Black rubber grating shall be provided at the bottom of the tray. Drain holes are also provided.

GRAVEL PAN
A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face.

The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

SIGHT RODS
Two (2) Bores, model BG48-10, lighted sight rods shall be mounted to the outside corners of the front bumper extension. The rods shall be polished stainless steel.

TOW HOOKS
No tow hooks are to be provided. This truck shall be equipped with a lift and tow package with integral tow eyes.

CAB INTERIOR
The cab dash fascias shall be a flat faced design to provide easy of maintenance and shall be constructed out of painted aluminum.

The engine tunnel shall be padded and covered with 46 ounce leather grain vinyl resistant to oil, grease and mildew.

The headliner shall be installed in both forward and rear cab sections. Headliner material shall be vinyl. A sound barrier shall be part of its composition. Material shall be installed on aluminum sheet and securely fastened to interior cab ceiling.

Forward portion of cab headliner shall provide easy access for servicing electrical wiring or for other maintenance needs without removing the entire unit.

CAB INTERIOR UPHOLSTERY
The cab interior upholstery shall be dark silver gray.

INTERIOR PAINT (Cab)
The cab interior metal surfaces shall be painted gray, vinyl texture paint.

GRAB HANDLE
A black rubber covered grab handle shall be mounted on the lower portion of the driver's side cab entrance to assist in entering the cab. The grab handle shall be securely mounted to the post area between the door and steering wheel column.

A long rubber grab handle shall be mounted on the dash board in front of the officer.

DRIVER SEAT
A Seats Inc. #911 "scissors-action" air-ride high-back style seat shall be provided in the cab for the driver.

The driver's seat shall be furnished with three (3)-point shoulder type seat belt. The seat belt shall be furnished with automatic retractor. Extension shall be provided with the seat belt so the male end can be easily grasped and the female end easily located while sitting in a normal position.

The seat back shall be removable for ease of access to components located behind the driver seat.

OFFICER SEAT
A Seats Incorporated 911 SCBA seat with high-back shall be provided in the cab for the officer. The SCBA cavity shall be adjustable front to rear in 0.50" increments to accommodate different size SCBA bottles.

Moving the SCBA cavity shall be accomplished by unbolting, relocating and rebolting in the desired location.

The officer seat shall be furnished with three point shoulder type seat belts. The seat belts shall be furnished with automatic retractors. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

REAR FACING PASSENGER SIDE OUTBOARD SEAT
One (1) rear facing, Seats Incorporated 911 SCBA seat shall be provided in the passenger side outboard position in crew cab. The SCBA cavity shall be adjustable front to rear in .50" increments to accommodate different size SCBA bottles.

Moving the SCBA cavity shall be accomplished by unbolting, relocating and rebolting in the desired location.

Seat shall be furnished with three-point shoulder type seat belt. The seat belt shall be furnished with automatic retractors. Extension shall be provided with the seat belt so the male end can be easily grasped and the female end easily located while sitting in a normal position.

EMS COMPARTMENT
A rear facing EMS compartment shall be provided in the crew cab at the driver side outboard position.

The compartment shall be 22.00" wide x 42.50" high x 26.00" deep with one (1) Gortite roll up door, non-locking, with white finish. The clear door opening of the compartment shall be 32.50" high x 15.00" wide.

The compartment shall be constructed of smooth aluminum, and painted to match the cab interior.

COMPARTMENT LIGHT
There shall be two (2) On Scene Solutions strip lights installed one (1) each side of the compartment opening. The lights shall be controlled by an automatic door switch.

This storage compartment shall be compliant per NFPA standard for automotive fire apparatus.

FORWARD FACING CENTER SEATS
There shall be two (2) forward facing, Seats Incorporated 911 SCBA seats provided at the center position in the crew cab. The SCBA cavity shall be adjustable front to rear in .50" increments to accommodate different size SCBA bottles.

Moving the SCBA cavity shall be accomplished by unbolting, relocating and rebolting in the desired location.

The seats shall be furnished with a three three-point, shoulder type seat belt. The seat belts shall be furnished with automatic retractors. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

SHELVING
There shall be two (2) shelves provided in the EMS compartment. Each shelf shall be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving shall be infinitely adjustable by means of a threaded tightener sliding in a track.

The location shall be Locate in EMS compartment.

RADIO COMPARTMENT

A radio compartment shall be provided under the officer's seat.

The inside compartment dimensions shall be 14.50" deep x 14.50" across x 9.00" high.

A drop-down door with a chrome plated lift and turn latch shall be provided for access.

The compartment shall be constructed of smooth aluminum and painted to match the cab interior.

SEAT UPHOLSTERY
All Seats Inc. 911 seat upholstery shall be black Imperial 1200 material.

AIR BOTTLE HOLDERS
All SCBA type seats in the cab shall have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket shall include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp shall constrain the SCBA bottle in the seat and shall exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, shall not be acceptable.

There shall be a quantity of four (4) SCBA brackets.

SHOULDER HARNESS HEIGHT ADJUSTMENT
All seating positions furnished with three (3)-point shoulder type seat belts shall include a height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter.

SEAT BELTS
All seating positions in the cab and crew cab shall have red seat belts.

SEAT BELT ANCHOR STRENGTH
Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design shall withstand 3000 lbs of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder shall certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH
Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

SEAT BELT MONITORING SYSTEM
A seat belt monitoring system (SBMS) shall be provided. The SBMS shall be capable of monitoring up to ten (10) sensors indicating the status of each seating position in the cab with green and red LED indicators as follows:

Seat Occupied	Buckled	Green
Seat Occupied	Unbuckled	Red
No Occupant	Buckled	Red
No Occupant	Unbuckled	Not Illuminated

The SBMS shall include an audible alarm that shall be activated when a red illumination condition exists and the parking brake is released, or a red illumination condition exists and the transmission is not in park.

HELMET STORAGE, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, section 14.1.8.4.1 requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department shall provide a location for storage of helmets.

FRONTAL IMPACT PROTECTION
The cab shall be equipped with a frontal impact protection system consisting of one (1) air bag in front of the driver, one

(1) knee bolster air bag in front of the forward passenger seating position, and S4 for suspension seats or belt pretensioners for fixed seats in the driver and forward passenger positions. The air bags shall be designed specifically for the cab configurations.

The cab and chassis design shall have been subjected, via third party test facility, to a 21 MPH crash impact during frontal and oblique impact testing. Testing shall include all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspension components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing shall provide configuration specific information used to optimize the timing for firing the air bags. (no exception)

The driver side air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact. The passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact.

In the event of a frontal or oblique impact, the system shall deploy the front driver and passenger side air bags, and activate the following components integrated into the driver and front passenger cab seats:

- Suspension seats shall be retracted to lowest travel position.
- Seat belts shall be pretensioned to firmly hold the occupants in place.

ADVANCED SIDE ROLL PROTECTION PACKAGE

An advanced side roll protection system shall be provided. The system shall be a supplemental restraint system designed for use with seat belts. The system shall be designed for a fast or slow vehicle 90-degree roll to the side, where the vehicle comes to rest on its side. The system shall consist of the following key components:

Side air bags shall only be provided outboard of the driver and officer forward positions. The side air bag shall be a tubular structure that extends diagonally across the width of the side window to help keep the occupant's head inside the vehicle and away from the window opening.

An integral suspension seat safety system shall be installed on the driver's seat. When activated, this system shall remove excess slack from the seat belt and retract the seat to its lowest travel position.

Seat belt pretensioners shall be provided in the remaining seating positions. When activated, these pretensioners shall remove excess slack from the seat belt.

Side wall impact-absorbing cushions shall be provided outboard of the crew cab seating positions.

A Side Roll Sensor shall be installed in the cab above the engine tunnel between the head liner and the cab roof skin. The sensor shall analyze the vehicle's angle and rate of roll to activate the advanced occupant restraints 120ms before the cab reaches 60 degrees from vertical. In the event of a side roll, the sensor shall activate the advanced occupant restraints. The sensor shall not activate in the event of a frontal impact, side impact, or any other incidents not involving a vehicle side rollover. If more than eight protective devices are required, a slave side roll sensor shall be provided with capacity for additional protective devices. The sensor(s) shall perform real time diagnostics of all critical subsystems and shall record sensory inputs immediately before and during a side roll event. A fault-indicating light shall be provided on the vehicles instrument panel.

The apparatus shall have four (4) crew seats in the crew cab.

Apparatus with tiller cabs shall include seats with seat belts. The tiller cab shall not be equipped with any side roll protection components.

CAB WARRANTY

The bidder shall furnish a **ten (10) year** cab warranty. The warranty shall cover defects in design or workmanship in the cab tubular support and mounting supports and other cab structural components identified in the specifications. A copy of the warranty shall be submitted with the bid. (no exception)

ENGINE COMPARTMENT LIGHT

An engine compartment light shall be installed under the engine hood, of which the switch is an integral part. Light shall have a .125" diameter weep hole in its lens to prevent moisture retention.

CAB INTERIOR LIGHTING

Auxiliary lights shall be provided in the cab and consisting of:

- Two (2) Weldon, Model 8081, red/clear dome light located, one (1) on the officer side and one (1) on the driver side, controlled by the following:
  Clear forward light controlled by the door switch and the lens switch.
  Red rearward light controlled by the lens switch.

- Two (2) Adjustable Map Lights: With switches mounted on the cab ceiling.

CREW CAB INTERIOR LIGHTING

Auxiliary lights shall be provided in the crew cab and consist of:

- Two (2) Weldon, Model 8081, Red/Clear dome lights located one (1) each side, controlled by the following:
  Clear forward light controlled by the door switch and the lens switch.
  Red rearward light controlled by the lens switch.

- A courtesy light at each door opening, controlled by automatic door switches

STEP LIGHTS

For reduced overall maintenance costs compared to incandescent lighting, there shall be eight (8) Ritar, Model M27HW2, LED, step lights provided. The lights shall be installed at each cab and crew cab door, two (2) per step, in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

The lights shall be activated when the adjacent door is opened.

CAB DEFROSTER

There shall be a 41,000 BTU/hr defroster in the cab located under the engine tunnel.

The defroster ventilation shall be built into the design of the cab dash instrument panel and shall be easily removable for maintenance.

The defroster shall have a three (3) speed blower, and temperature controls accessible to the driver and officer.

The defroster ducts shall be designed to provide maximum defrosting capabilities for the front cab windows.

CAB/CREW CAB HEATER

Two (2) auxiliary heaters with 32,000 BTU/hr each shall be provided in the cab. The heaters shall have a three (3) speed blower, and temperature controls accessible to the driver and officer. There shall also be louvers located below the rear facing seat riser and below the driver and officer positions for airflow.

The heaters shall be mounted, one (1) within each rear facing seat riser.

CAB DEFROSTER CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 *Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, and Multipurpose Vehicles.* The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

CAB HEATER CERTIFICATION

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters shall warm the cab 75 F from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder shall certify that a substantially similar cab has been tested and has met these criteria.

AIR CONDITIONING
An air conditioning system shall be furnished inside the cab and crew cab.

The system shall be centrally mounted on the cab.

The air conditioner refrigerant shall be R-134A, installed by a certified technician.

INTERIOR CAB INSULATION
The cab and crew cab walls shall be insulated with 2.00" insulation where possible and the roof with 1.00" insulation to aid in cooling.

The insulation shall be covered with a vinyl liner or a metal panel painted to match the interior.

An additional red warning light shall be installed to the side of the exterior air conditioning housing. The light shall match the upper zone lighting package to meet NFPA requirements.

No change orders shall be allowed for this option. This option shall be allowed for orders with a 12 month leadtime from the time the order is submitted to Pierce.

CAB INSTRUMENTATION
The cab instrument panel shall include gauges, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches shall be identified by a label adjacent to each item. Actuation of the headlight switch shall illuminate the labels in low light conditions. Telltale indicator lamps shall not be illuminated unless necessary. The cab instruments and controls shall be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership.

GAUGES
The gauge panel shall include the following nine (9) black faced gauges with black bezels to monitor vehicle performance:

Voltmeter gauge (volts):
- Low volts (11.8 VDC)
  - Amber telltale light on indicator light display with steady tone alarm
- High volts (15.5 VDC)
  - Amber telltale light on indicator light display with steady tone alarm

Engine Tachometer (RPM)
Speedometer MPH
Fuel level gauge (Empty - Full in fractions):
- Low fuel (1/8 full)
  - Amber telltale light on indicator light display with steady tone alarm

Engine Oil pressure Gauge (PSI)
- Low oil pressure to activate engine warning lights and alarms
  - Red telltale light on indicator light display with steady tone alarm

Front Air Pressure Gauges (PSI)
- Low air pressure to activate warning lights and alarm
  - Red telltale light on indicator light display with steady tone alarm

Rear Air Pressure Gauges (PSI)
- Low air pressure to activate warning lights and alarm
  - Red telltale light on indicator light display with steady tone alarm

Transmission Oil Temperature Gauge (Fahrenheit):
- High transmission oil temperature activates warning lights and alarm
  - Amber telltale light on indicator light display with steady tone alarm

Engine Coolant Temperature Gauge (Fahrenheit):
- High engine temperature activates an engine warning light and alarms
  - Red telltale light on indicator light display with steady tone alarm

INDICATOR LAMPS
To promote safety, the following telltale indicator lamps shall be located on the instrument panel in clear view of the driver. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols.
The following amber telltale lamps shall be present:

Low coolant
Trac cntl (traction control) (where applicable)
Check engine
Check trans (check transmission)
Air rest (air restriction)
Driver door open
Passenger door open
Tower (tower raised) (where applicable)
DPF (engine diesel particulate filter regeneration)
HET (engine high exhaust temperature) (where applicable)
ABS (antilock brake system)
MIL (engine emissions system malfunction indicator lamp) (where applicable)
Regen inhibit (engine emissions regeneration inhibit) (where applicable)
Trans temp (transmission temperature)
Side roll fault (where applicable)
Front air bag fault (where applicable)
Aux brake overheat (auxiliary brake overheat) (where applicable)

The following red telltale lamps shall be present:

Ladder rack down
Parking brake
Stop engine

The following green telltale lamps shall be present:

Left turn
Right turn
Battery on
Ignition
Aux brake (auxiliary brake engaged) (where applicable)

The following blue telltale lamps shall be present:

High beam

ALARMS

Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning message is present.

INDICATOR LAMP AND ALARM PROVE-OUT

A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out when the ignition switch is held in the up position for 3-5 seconds to ensure proper performance.

CONTROL SWITCHES

For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches shall have backlit labels for low light applications.

Headlight/Parking light switch: A three (3) position maintained rocker switch shall be provided. The first switch position shall deactivate all parking and headlights. The second switch position shall activate the parking lights. The third switch shall activate the headlights.

Panel backlighting intensity control switch: A variable voltage control switch shall be provided. The switch moved in the up direction increases the panel backlighting intensity to a maximum and the switch moved in a down direction decreases the panel backlighting intensity to a minimum level.

Ignition switch: A three (3) position maintained/maintained/momentary rocker switch shall be provided. The first switch position shall deactivate vehicle ignition. The second switch position shall activate vehicle ignition. The third momentary position shall perform prove-out on the telltale indicators and alarms when the ignition switch is held in the up position for 3-5 seconds to ensure proper performance. A green indicator lamp is activated with vehicle ignition.

Engine start switch: A two (2) position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

Hazard switch shall be incorporated into the steering column.

Heater and defroster controls.

Turn signal arm: A self-canceling turn signal with high beam headlight controls.

Windshield wiper control shall have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control.

Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel.

CUSTOM SWITCH PANELS

The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There shall be positions for up to three (3) switch panels in the overhead console on the driver's side, up to five (5) switch panels in the engine tunnel console, and up to three (3) switch panels in the overhead console on the officer's side. All switches have backlit labels for low light applications.

High idle engagement switch: A maintained rocker switch with integral indicator lamp shall be provided. The switch shall activate and deactivate the high idle function. The OK TO ENGAGE HIGH IDLE indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch shall indicate when the high idle function is engaged.

OK to high idle indicator lamp: A green indicator light shall be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

Diesel particulate filter regeneration switch (where applicable)
Diesel particulate filter regeneration inhibit switch (where applicable)

DIAGNOSTIC PANEL

A diagnostic panel shall be accessible while standing on the ground and shall be located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist. The diagnostic panel shall include the following:

Engine diagnostic port
Transmission and ABS diagnostic port
Roll sensor diagnostic port
Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
ABS diagnostic switch (blink codes flashed on ABS telltale indicator).

- High Air Restriction Warning Indicator Light (electronic).

WIPER CONTROL

Wiper control shall consist of a two (2)-speed individual windshield wiper control with intermittent feature and windshield washer controls. The control shall also have a "return to park" provision, which allows the wipers to return to the stored position when the wipers are not in use.

WINDSHIELD WIPER DURABILITY CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.

RADIO ANTENNA MOUNT

There shall be two (2) antenna-mounting bases, Model MATM, with coax cable and weatherproof cap provided for a two-way radio.

The first mount shall be located on the cab roof just to the rear of the officer seat. The cable shall be routed to the seat box on the officer side with enough cable for customer to route to the instrument panel if needed.

Any additional mounts shall be located 18 inches apart on cab roof.

The cable shall be routed to the officer side seat box.

SWITCH PANELS

The built-in emergency light switch panel shall have a master switch plus individual switches for selective control. The switch panel shall be located in the "overhead" position above the windshield on the driver's side to allow for easy access. Switches shall be rocker type with an indicator light, of which is an integral part of the switch.

ELECTRICAL POWER CONTROL SYSTEM

A compartment shall be provided in or under the cab to house the vehicles electrical power and signal circuit protection and control components. The power and signal protection and control compartment shall contain circuit protection devices and power control devices. Power and signal protection and control components shall be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray.

Serviceable components shall be readily accessible.

Circuit protection devices, which conform to SAE standard, shall be utilized to protect each circuit. All circuit protection devices shall be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. PTO power circuits shall be protected by Type III manual reset non-cycling circuit breakers conforming to SAE J553 or J258 which remain open until manually reset. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized to protect electronic equipment.

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected.

Visual status indicators shall be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical shall be used.

VOLTAGE MONITOR SYSTEM

A voltage monitor system shall be provided to indicate the status of each battery system connected to the vehicles electrical load. The monitor system shall provide visual and audio warning when the system voltage is above or below optimum levels.

POWER AND GROUND STUD

A 12-volt power stud and a grounding stud shall be provided in the electrical component compartment for 2-way radio equipment.

EMI/RFI PROTECTION

The electrical system proposed shall include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components shall be used to insure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source.

The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor shall be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements.

EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. The electrical system shall be designed for full compatibility with low level control signals and high powered 2-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI-RFI susceptibility.

VEHICLE DATA RECORDER

A vehicle data recorder (VDR) shall be provided. The VDR shall be capable of reading and storing vehicle information. The VDR shall be capable of operating in a voltage range from 8VDC to 16VDC. The VDR shall not interfere with, suspend, or delay any communications that may exist on the CAN data link during the power up, initialization, runtime, or power down sequence. The VDR shall continue operation upon termination of power or at voltages below 8VDC for a minimum of 10ms.

The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs:

Vehicle Speed -	MPH
Acceleration -	MPH/sec
Deceleration -	MPH/sec

Engine Speed -	RPM
Engine Throttle Position -	% of Full Throttle
ABS Event-	On/Off
Seat Occupied Status -	Yes/No by Position (7-12 Seating Capacity)
Seat Belt Buckled Status -	Yes/No by Position (7-12 Seating Capacity)
Master Optical Warning Device Switch -	On/Off
Time -	24 Hour Time
Date -	Year/Month/Day

AUTOMATIC CHASSIS LUBRICATION

A Vogel Automatic Lubrication System shall be provided. The lubrication shall be supplied while the vehicle ignition switch is active to allow a uniform application of grease to the locations listed. The electronic control unit that forms part of the system, shall activate the pump after an adjustable interval time. The unit shall control and monitor pump operation and report any faults via an indicator light on the driver's dashboard of the cab.
The lubrication system reservoir which requires a 15.00" wide x 14.50" high x 6.25" deep mounting area, shall be located For easy access on the apparatus.

- Independent suspension control Arm Pivot Points

-Steering Miter Box

-Cab Hinge Pins

-Rear Axle Slack Adjusters

-Rear Axle Brake Cam Screws

- Rear Suspension Spring Pins

- Rear Suspension Shackle Pins

-Walking Beam Pins (Tandem axle, if applicable).

BATTERY SYSTEM

Six (6) 12 volt, Exide Model 31S950X3W batteries that include the following features shall be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 5700 CCA at 0 degrees Fahrenheit
- 1140 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

BATTERY SYSTEM

A single starting system shall be provided.

An ignition switch and starter button shall be located on the instrument panel.

MASTER BATTERY SWITCH

A master battery switch, to activate the battery system, shall be provided inside the cab within easy reach of the driver.

An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.

BATTERY COMPARTMENTS
Batteries shall be placed on non-corrosive mats and be stored in well-ventilated compartments located under the cab. The battery hold-downs shall be of a non-corrosive material. All bolts and nuts shall be stainless steel.

Heavy-duty battery cables shall be used to provide maximum power to the electrical system. Cables shall be color-coded.

Battery terminal connections shall be coated with anti-corrosion compound. Battery solenoid terminal connections shall be encapsulated with semi-permanent rubberized compound.

There shall be a door in the crew cab floor to provide access to the battery terminals.

JUMPER STUDS
One (1) set of battery jumper studs with plastic color-coded covers shall be installed on the front side of battery box on the driver's side. This shall allow enough room for easy jumper cable access. A tag shall be provided for positive/negative terminals.

BATTERY CHARGER
An IOTA, model DSL 75 battery charger with IQ4 controller shall be provided.

The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.

A Kussmaul remote indicator #091-94-12 shall be included.

Battery charger shall be located in the crew cab seat riser.

The battery charger indicator shall be located on the driver's seat riser.

ALTERNATOR
A C.E. Niehoff, Model C656, alternator shall be provided. It shall have a rated output current of 400 amp as measured by SAE method J56. It shall have a high volume air cooling fan and fan guard. It shall also have a custom three (3)-set point voltage regulator, manufactured by C. E. Niehoff. The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

RADIO ANTENNA MOUNT
Antenna mounting base(s), Model MATM with 25 feet of coax cable and weatherproof cap, shall be provided for a two way radio. The mount(s) shall be located 18 inches apart on cab roof on the cab roof just to the rear of the front cab seats. The cable shall be routed routed to the officer side seat box.

There shall be three (3) provided.

SPEAKER WIRE
The cab and crew cab shall be pre-wired with speaker wire for future installation of radio. One (1) pair of speaker wires shall be routed from the lower switch panel to each rear corner of the cab. One (1) pair of speaker wires shall be routed from the lower switch panel to each rear corner of the crew cab.

CUSTOMER RADIO WIRING
There shall be one (1) 12 volt combination wiring leads of which each shall include, one (1) battery switched, one (1) ignition and one (1) negative, for use with radio equipment. Each lead shall be 18" long and be provided Officers seat box. The leads shall be clearly marked and in a coil. A breaker rated for 30 amps shall be provided for circuit protection of the battery switched lead with a minimum of 10 gauge wire. The ignition lead is for sensing purposes only.

The wires shall be colored coded as follows:
-red for battery switched
-yellow for ignition
-black for ground

SPARE CIRCUIT
There shall be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires shall have the following features:

The positive wire shall be connected directly to the battery power.
The negative wire shall be connected to ground.
Wires shall be protected to 15 amps at 12 volts DC.
Power and ground shall terminate between driver and officer seat on dashboard.
Termination shall be with 15 amp, power point plug with rubber cover.

Wires shall be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

ELECTRONIC LOAD MANAGEMENT

A Kussmaul electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, and automatically reduces the electrical load in the event of a low voltage condition and by doing so, ensures the integrity of the electrical system.

The ELM shall monitor the vehicle's voltage while at the scene (parking brake applied). It shall sequentially shut down individual electrical loads when the system voltage drops below a preset value. Five (5) separate electrical loads shall be controlled by the load manager. The ELM shall sequentially re-energize electrical loads as the system voltage recovers.

The (ELM) also includes sequencer function for the five (5) managed loads and two (2) additional.

AMP DRAW REPORT

The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus shall provide the following:

1) Documentation of the electrical system performance tests.

2) A written load analysis, which shall include the following:
   A) The nameplate rating of the alternator.

   B) The alternator rating under the conditions specified per:
   Applicable NFPA 1901 or 1906 (Current Edition).

   C) The minimum continuous load of each component that is specified per:
   Applicable NFPA 1901 or 1906 (Current Edition).

   D) Additional loads that, when added to the minimum continuous load, determine the total connected load.

   E) Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

EXTERIOR LIGHTING

Exterior lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at time of proposal.

Front headlights shall be halogen, rectangular shape, one (1) pair mounted in each front trim housing.

The LED directional lights shall wrap-around on the outside corners of the trim housing. The headlight and LED directional lights shall be in the same assembly.

Five (5) LED clearance and marker lights shall be installed across the leading edge of the cab.

WARNING LIGHTS (Cab Face)

Four (4) Whelen Model M6*C LED flashing warning lights shall be installed on the cab face, above the headlights, mounted in a common bezel.
The driver's side front outside warning light to be red.
The driver's side front inside warning light to be red.
The passenger's side front inside warning light to be red.

The passenger's side front outside warning light to be red.
All four (4) lights shall include a clear lens.
All four (4) lights shall be controlled by a lighted switch in the cab on the switch panel.
The inside lights may be load managed if colored or disabled if white, when the parking brake is set.

BACK-UP ALARM
An ECCO, Model SA917-PM2, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The device shall sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum five (5) dBA above surrounding environmental noise levels.

MANUAL, FIRE APPARATUS PARTS
Two (2) custom parts manuals for the complete fire apparatus shall be provided in hard copy with the completed unit.

One (1) compact disc (CD) shall also be provided that shall include all of the information from the above manual.

The manual shall contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in Alphabetical order
- Instructions on how to locate a parts

The manual shall be specifically written for the chassis and body model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

SERVICE PARTS INTERNET SITE
The service parts information included in this manual is also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

MANUALS, CHASSIS SERVICE
Two (2) chassis service manuals containing parts and service information on major components shall be provided with the completed unit.

One (1) compact disk (CD) shall also be provided that shall include all of the information from the above manual.

The manuals shall contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

The manual shall be specifically written for the chassis model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

MANUALS, CHASSIS OPERATION
Two (2) chassis operation manuals shall be provided.

One (1) compact disk (CD) shall also be provided that shall include all of the information from the above manual.

ELECTRICAL WIRING DIAGRAMS
Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.

WATER TANK
Booster tank shall have a capacity of 750 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated.

Tank joints and seams shall be nitrogen welded inside and out.

Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments.

Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions shall interlock and shall be welded to the tank bottom and sides.

Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.

Tank top shall be sufficiently supported to keep it rigid during fast filling conditions.

Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that is 8.00" long x 8.00" wide x 6.00" deep shall be provided at the bottom of the water tank.

Sump shall include a drain plug and the tank outlet.

Tank shall be installed in a fabricated cradle assembly constructed of structural steel.

Sufficient crossmembers shall be provided to properly support bottom of tank. Crossmembers shall be constructed of steel bar channel or rectangular tubing.

Tank shall "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on.

Stops or other provision shall be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system shall be approved by the tank manufacturer.

Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 8.00" wide x 14.00" long.

Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, shall be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

WATER TANK WARRANTY
The tank shall have a **lifetime** warranty.

If the tank manufacturer determines that the tank problem has rendered the truck out-of-service, the tank manufacturer shall dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank (This time period is for the United States and Canada only).

HOSE BED

The hose body shall be fabricated of .125"-5052 aluminum with a 38,000 psi tensile strength.

Hose body width shall be a minimum of 68.00" inside.

Upper and rear edges of side panels shall have a double break for rigidity, a split tube finish shall not be acceptable.

The upper inside area of the beavertails shall be covered with brushed stainless steel to prevent damage to painted surface when hose is removed.

Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall be a minimum of .50" x 4.50" with spacing between slats for hose ventilation.

Hose bed shall accommodate 800 feet of four inch LDH500 feet of 2.5 inch hose350 feet of 1.75 hose.

Three (3) adjustable hosebed dividers shall be furnished for separating hose.

Each divider shall be constructed of a .125" brushed aluminum sheet fitted and fastened into a slotted, 1.50" diameter radiused extrusion along the top, bottom, and rear edge.

Partition shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.

Divider shall be held in place by tightening bolts, at each end.

Acorn nuts shall be installed on all bolts in the hose bed which have exposed threads.

HOSE BED COVER

A two (2) section hose bed cover, constructed of .125" bright aluminum treadplate shall be furnished. The cover shall be hinged with full length stainless steel piano hinge. The sides shall be slanted down.

The cover shall be reinforced so that it can support the weight of a man walking on the cover.

If access to water tank fill tower is blocked by the hose bed cover, then a hinged door shall be provided in it so that tank may be filled without raising cover doors.

Chrome grab handles and gas filled cylinders shall be provided to assist in opening and closing the cover. A handrail is to be provided at the rear, in the center of the support, to assist in opening the cover.

A red vinyl flap shall be installed on the rear of the bright aluminum treadplate hose bed cover, with a chain weight and a spring clip-and-hook hold downs shall be provided at the rear of the cover.

RUNNING BOARDS

Running boards shall be fabricated of .125" bright aluminum treadplate.

Each running board shall be supported by a welded 2.00" square tubing and channel assembly, which shall be bolted to the pump compartment substructure.

Running boards shall be 12.75" deep and spaced .50" away from the pump panel.

A splashguard shall be provided above the running board treadplate.

TAILBOARD

Rear step shall also be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly.

The rear tailboard shall be 16.00" deep.

The exterior side shall be flanged down and in.

Flanges shall not be notched.

Entire rear surface between the beavertails shall be covered with smooth aluminum.

Inside surface of each beavertail in the hose bed area shall be covered with stainless steel to protect the paint finish.

The remaining inside surface of the beavertails shall be covered with bright aluminum treadplate.

TOW BAR

A tow bar shall be installed under the tailboard at center of truck.

Tow bar shall be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly shall be constructed of .38" structural angle. When force is applied to the bar, it shall be transmitted to the frame rail.

Tow bar assembly shall be designed and positioned to allow up to a 30-degree upward angled pull of 17,000 pounds, or a 20,000-pound straight horizontal pull in line with the centerline of the vehicle.

Tow bar design shall have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

COMPARTMENTATION

Body and compartments shall be fabricated of .125", 5052-H32 aluminum with a tensile strength range of 31,000 to 38,000 psi.

Side compartments shall be an integral assembly with the rear fenders.

Circular fender liners shall be provided for prevention of rust pockets and ease of maintenance.

Compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip.

The compartment door opening shall be framed by flanging the edges in 1.75” and bending out again .75” to form an angle.

Drip protection shall be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment shall be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers shall have the corners “TIG” welded.

Side compartment covers shall be separate from the compartment tops.

Front facing compartment walls shall be covered with bright aluminum treadplate.

All screws and bolts which protrude into a compartment shall have acorn nuts on the ends to prevent injury.

UNDERBODY SUPPORT SYSTEM

Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load shall be provided.

The backbone of the support system shall be the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads.

The support system shall include .375” thick steel vertical angle supports bolted to the chassis frame rails with .625” diameter bolts.

Attached to the bottom of the steel vertical angles shall be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body.

A steel frame shall be mounted on the top of these supports to create a “floating substructure” which shall result in a 500 pound equipment support rating per lower compartment.

The floating substructure shall be separated from the horizontal members with neoprene elastomer isolators. These isolators shall reduce the natural flex stress of the chassis from being transmitted to the body.

Isolators shall have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The neoprene isolators shall be installed in a modified "V" three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body.

A design with body compartments hanging on the chassis in an unsupported fashion shall not be acceptable.

AGGRESSIVE WALKING SURFACE

All exterior surfaces designated as stepping, standing, and walking areas shall comply with the required average slip resistance of the current NFPA standards.

LOUVERS

All body compartments shall have a minimum of one (1) set of louvers stamped into a wall to provide the proper airflow inside the compartment and to prevent water from dripping into the compartment. These louvers shall be formed into the metal and not added to the compartment as a separate plate.

TESTING OF BODY DESIGN

Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.

Body shall be tested while loaded to its greatest inservice weight.

The criteria used during the testing procedure shall include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.

- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.

- Driving the vehicle at 35 mph on a "washboard" road.

- Driving the vehicle at 55 mph on a smooth road.

- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

Evidence of actual testing techniques shall be made available upon request.

BODY WARRANTY

A copy of the fire apparatus manufacturer's warranty shall be included with the bid. The warranty shall state that the body shall be free of structural failures caused by defective design or workmanship for a warranty period of **ten (10) years** from the date the new vehicle is first delivered **or 100,000 miles,** whichever occurs first and that defective parts, under the warranty, shall be repaired or replaced without charge to the original purchaser.

COMPARTMENTATION, DRIVER'S SIDE

A full height, roll-up door compartment ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 34.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. The height of the compartment shall be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 28.75" wide x 58.25" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A roll-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 25.38" high x 12.00" deep. The height of the compartment shall be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment shall be calculated with the compartment door closed. The clear door opening of this compartment shall be 58.25" wide x 25.12" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The height of the compartment shall be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 44.75" wide x 58.25" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

COMPARTMENTATION, PASSENGER'S SIDE

A full height, roll-up door compartment ahead of the rear wheels shall be provided.. The interior dimensions of this compartment shall be 34.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. The height of the compartment shall be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 28.75" wide x 58.25" high. Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A roll-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 25.38" high x 12.00" deep. The height of the compartment shall be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment shall be calculated with the compartment door closed. The clear door opening of this compartment shall be 58.25" wide x 25.12" high. Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.50" wide x 58.25" high x 12.00" deep. A section of this compartment shall be 25.88" deep x 47.50" wide x 26.00" high directly behind the rear wheels. The height of the compartment shall be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 44.75" wide x 58.25" high. Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

DOORS, SIDE COMPARTMENT

Seven (7) compartment doors shall be provided with roll-up doors.

The roll-up doors shall be double faced, aluminum construction and manufactured by Amdor, Inc. These doors shall be painted one color to match the lower portion of the body.

A stainless steel lift bar shall be provided for opening door. It shall be located at the bottom of door and have latches on the outer extrusion of the door frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.

A heavy-duty magnetic switch shall be used for control of the "Open Compartment Door" warning lights.

The door frames shall be capable of mounting Luma Bar compatment lighting.

COMPARTMENTATION, REAR

A roll-up door compartment above the rear tailboard shall be provided.

Interior dimensions of this compartment shall be 40.00" wide x 47.38" high x 25.88" deep in the lower 38.75" of height and 15.75" deep in the remaining upper portion. Depth of the compartment shall be calculated with the compartment door closed.

A louvered, removable access panel shall be furnished on the back wall of the compartment.

Rear compartment shall be open into the rear side compartments.

Clear door opening of this compartment shall be 33.25" wide x 38.75" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

DOOR(S), REAR COMPARTMENT

The rear roll-up door(s) shall be double faced, aluminum construction and manufactured by Amdor, Inc. This door shall be satin aluminum.

A heavy-duty magnetic switch shall be used for control of the "Open Compartment Door" warning lights.

The door frames shall be capable of mounting Luma Bar compatment lighting.

MATTING, COMPARTMENT SHELVING

Dri-Deck rubber compartment matting shall be provided in eight (8) shelves. The locations are, The eight shelves.

The Dri-Deck shall be red, and .562" thick with holes in the decking to allow air to flow.

MATTING, COMPARTMENT FLOOR

Turtle Tile compartment matting shall be provided in seven (7) compartments on the compartment floor. The locations are in , each compartment floor.

The Turtle Tile shall be red and the leading edge of the matting shall include the beveled edge.

ADJUSTABLE SHELVES

There shall be eight (8) shelves, with a minimum capacity of 215 pounds provided. The shelf construction shall consist of .125" pan-shaped aluminum with 2.00" sides. Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

The location shall be One shelf in D1, D2, D3, P1, P2, P3 and Two shelves in R1.

MOUNTING TRACKS

There shall be eight (8) sets of tracks for mounting shelf(s) in all body compartments. These tracks shall be installed vertically to support the adjustable shelf(s).

RUB RAIL

Bottom edge of the side compartments shall be trimmed with a bright aluminum extruded rub rail.

Trim shall be 2.12" high with 1.38" flanges turned outward for rigidity.

The rub rails shall not be an integral part of the body construction, which allows replacement in the event of damage.

BODY FENDER CROWNS

Stainless steel fender crowns shall be provided around the rear wheel openings.

A rubber welting shall be provided between the body and the crown to seal the seam and restrict moisture from entering.

A dielectric barrier shall be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

HARD SUCTION HOSE

Two (2) lengths of 6.00" corrugated hard suction hose, 10' in length, shall be provided. The hose shall be equipped with a long handle female coupling on one (1) end and a rocker lug male coupling on the other end. Couplings shall be hard coated

aluminum.

HOSE TROUGHS
Hard suction hose shall be carried in two (2) V-shaped troughs, one (1) each side, and held in place by chrome plated, quarter turn, spring loaded clamps.

Troughs shall be constructed of aluminum and painted job color.

HANDRAILS
The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface.

Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces.

Drain holes shall be provided in the bottom of all vertically mounted handrails.

- Four (4) handrails shall be provided, two above each side pump panel.
- One (1) vertical handrail shall be provided on the driver's side body, on the front bulkhead door frame.

- One (1) vertical handrail, not less than 29.00" long, shall be located on each rear beavertail.

- One (1) full width horizontal handrail shall be provided below the hose bed at the rear of the apparatus.

- Two (2) handrails shall be provided mounted front of body, one each side mounted vertical..

AIR BOTTLE STORAGE (Single bottle)
A total of four (4) air bottle compartments shall be provided and located recessed in body fender panel, two each side of truck.. The air bottle compartment shall be in the form of a round tube (7.63" diameter minimum) and of adequate depth to accommodate different size air bottles. Flooring shall be rubber lined and have a drain hole. A stainless steel door with a chrome-plated latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

A stainless steel scuffplate shall be provided around each air bottle compartment opening. The scuffplates shall not be visible when the air bottle compartment door is closed.

EXTENSION LADDER
There shall be a 24', two (2) section, aluminum, Duo-Safety, Series 900-A extension ladder provided.

ROOF LADDER
There shall be a 14' aluminum, Duo-Safety, Series 775-A roof ladder provided.

LADDER STORAGE
The ladders shall be stored between the water tank and the passenger's side compartments.

The ladders shall extend into the pump compartment just to the rear of the water pump discharges.

The ladder storage area shall be enclosed as practical by means of sheet metal to protect the ladders from road dirt. The ladders that extend into the pump house shall also be enclosed. A black rubber boot shall be provided to enclosed the ladders in the gap between the pump house and the body.

Each ladder shall be stored vertically in a separate stainless steel storage trough. Each stainless steel trough shall be lined with Dura-Surf nylon slides.

A bright aluminum treadplate enclosure shall be provided at the rear of the body to properly contain the ladders This enclosure shall extend to the rear of the side body compartments.

The enclosure shall also include a vertically hinged smooth aluminum door with a lift and turn latch to access the ladders.

FOLDING LADDER

One (1) 10' aluminum, Series 585-A Duo-Safety folding ladder shall be installed in a U-shaped trough inside the ladder storage compartment.

PIKE POLE 8 FT
There shall be one (1) Fire Hooks Unlimited APH-8, 8 foot pike pole(s) with fiberglass handles provided in the ladder compartment.

PIKE POLE 6 FT
There shall be one (1) Fire Hooks Unlimited APH-6, 6 foot pike pole(s) with fiberglass handles and gas shut off provided. Located in the ladder storage compartment.

PIKE POLE STORAGE
Aluminum tubing shall be used for the storage of two (2) pike poles and shall be located in ladder storage compartment. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate shall be provided.

STEPS
An Eberhard step shall be provided on the front of each fender compartment. The front step shall be a bright finished folding type.

REAR FOLDING STEPS
Chrome Eberhard folding steps and corner steps shall be provided at the rear. All steps shall provide adequate surface for stepping.

Four (4) additional folding steps, Eberhard, shall be located Two additional steps on each front body bulkhead.

PUMP
Pump shall be a Waterous CSU, 1500 gpm single (1) stage midship mounted centrifugal type.

Pump shall be the class "A" type.

Pump shall deliver the percentage of rated discharge at pressures indicated below:
- 100% of rated capacity at 150 psi net pump pressure.
- 70% of rated capacity at 200 psi net pump pressure.
- 50% of rated capacity at 250 psi net pump pressure.

Pump body shall be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump shall be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves shall be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges shall be used.

Discharge manifold of the pump shall be cast as an integral part of the pump body assembly and shall provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.50" openings shall be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft shall be stainless steel, accurately ground to size. It shall be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller shall have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings shall be used.

Stuffing boxes shall be of the conventional two (2) piece, split-gland type, to permit adjustment or replacement of Grafoil

packing without disturbing the pump. Water shall be fed into stuffing box lantern rings for proper lubrication and cooling when the pump is operating.

Lantern rings shall be located at the inner ends of the stuffing boxes, to avoid having to remove them when replacing pump packing.

Wear rings shall be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

PUMP TRANSMISSION

Pump transmission shall be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump shall be through a high strength Morse HY-VO silent drive chain.

Drive shafts shall be a minimum of 2.35" diameter hardened and ground alloy steel. All shafts shall be ball bearing supported. The case shall be designed as to eliminate the need for water cooling.

AIR PUMP SHIFT

Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control shall also be located on the driver's side pump panel.

Two (2) indicator lights shall be provided adjacent to the pump shift inside the cab. One (1) green light shall indicate the pump shift has been completed and be labeled "pump engaged". The second green light shall indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light shall be labeled "OK to pump".

Another green indicator light shall be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light shall be labeled "Warning: Do not open throttle unless light is on".

The pump shift control in the cab shall be illuminated to meet NFPA requirements.

TRANSMISSION LOCK-UP

The direct gear transmission lock-up for the fire pump operation shall engage automatically when the pump shift control, in the cab, is activated.

AUXILIARY COOLING SYSTEM

A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. Heat exchanger shall be cylindrical type and shall be a separate unit. It shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve.

INTAKE RELIEF VALVE

An Elkhart relief valve shall be installed on the suction side of the pump preset at 125 psig.

Relief valve shall have a working range of 75 psig to 250 psig.

Outlet shall terminate below the framerails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag.

Control shall be located behind an access door at the right (passenger's) side pump panel.

PRESSURE CONTROLLER

A Pierce Pressure Governor shall be provided. An electric pressure governor shall be provided which is capable of automatically maintaining a desired preset discharge pressure in the water pump. When operating in the pressure control mode, the system shall automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow, within the discharge capacities of the water pump and water supply.

A pressure transducer shall be installed in the water discharge of the pump. The transducer continuously monitors pump pressure sending a signal to the Electronic Control Module (ECM).

The governor can be used in two (2) modes of operation, RPM mode and pressure modes.

In the RPM mode, the governor can be activated after vehicle parking brake has been set. When in this mode, the governor shall maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In the pressure mode, the governor system can only operate after the fire pump has been engaged and the vehicle parking brake has been set. When in the pressure mode, the pressure controller monitors the pump pressure and varies engine speed to maintain a precise pump pressure. The pressure controller shall use a quicker reacting J1939 database for engine control. (excluding Cat engines)

A preset feature allows a predetermined pressure or rpm to be set.

A pump cavitation protection feature is also provided which shall return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five (5) seconds.

The throttle shall be a vernier style control, with a large control knob for use with a gloved hand. A throttle ready light shall be provided adjacent to the throttle control. A large .75" RPM display shall be provided to be visible at a glance.

Check engine, and stop engine indicator lights shall be provided for easy viewing.

Large .75" push buttons shall be provided for menu, mode, preset, and silence selections.

The water tank level indicator shall be incorporated in the pressure governor.

A fuel level indicator shall be incorporated in the pressure controller.

A pump hour meter shall be incorporated in the pressure controller.

The pressure controller shall incorporate monitoring for engine temperature, oil pressure, fuel level alarm, and voltage. Pump monitoring shall include, pump gearcase temperature, error codes, diagnostic data, pump service reminders, and time stamped data logging, to allow for fast accurate trouble shooting. It shall also notify the driver/engineer of any problems with the engine and the apparatus. Complete understandable messages shall be provided in a 20-character display, providing for fewer abbreviations in the messages. An automatic dim feature shall be included for night operations.

The pressure controller shall include a USB port for easy software upgrades, which can be downloaded through a USB memory stick, eliminating the need for a laptop for software installations.

A complete interactive manual shall be provided with the pressure controller.

ESP PRIMING PUMP

Priming pump shall be a positive displacement vane type, electrically driven, and conforming to standards outlined in NFPA pamphlet #1901.

One (1) priming control shall open the priming valve and start the priming motor.

Primer shall be environmentally safe and self lubricating.

RECIRCULATING LINE, WITH CHECK VALVE

A .50" diameter recirculating line, from the pump to the water tank, shall be furnished with a control installed at the pump operator's control panel. A check valve shall be provided in this line to prevent the back flow of water from the tank to the pump if the valve is left in the open position.

PUMP WARRANTY

A Waterous five **(5) year** warranty shall be provided for the pump.

PUMP MANUALS

Two (2) pump manuals from the pump manufacturer shall be furnished in compact disc format with the apparatus. Manuals shall cover pump operation, maintenance, and parts.

PLUMBING

All inlet and outlet plumbing, 3.00" and smaller, shall be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with high-tensile polyester braid. Small diameter secondary plumbing such as drain lines shall be stainless steel, brass or hose.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with victaulic or rubber couplings.

Plumbing manifold bodies shall be ductile cast iron or stainless steel.

All lines shall drain through a master drain valve or shall be equipped with individual drain valves. All individual drain lines for discharges shall be extended with a hose to drain below the chassis frame.

All water carrying gauge lines shall be of flexible polypropylene tubing.

PUMP PLUMBING WARRANTY
The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of **ten (10) years or 100,000 miles**. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery. A copy of the warranty shall be submitted with the bid. (no exception)

MAIN PUMP INLETS
A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

The main pump inlets shall have National Standard Threads with a long handle chrome cap.

The cap shall be the VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

SHORT SUCTION TUBE
The suction tubes on the midship pump shall have "short" suction tubes to allow for installation of adapters without excessive overhang.

VALVES
All ball valves shall be Akron Brass in-line valves. The Akron valves shall be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves shall have a ten (10) year warranty.

INLET (Left side)
On the left side pump panel shall be one (1) 2.50" auxiliary suction, terminating in 2.50" National Standard Hose Thread. The auxiliary suction shall be provided with a strainer, chrome swivel and plug.

The location of the valve for the one (1) inlet shall be recessed behind the pump panel.

INLET CONTROL
Control for the side auxiliary inlet(s) shall be located at the inlet valve.

INLET BLEEDER VALVE
A .75" bleeder valve shall be provided for each side gated inlet. The valves shall be located behind the panel with a swing style handle control extended to the outside of the panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders shall be routed below the chassis frame rails.

TANK TO PUMP
The booster tank shall be connected to the intake side of the pump with heavy duty piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line shall run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.

A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

TANK REFILL
A 1.50" combination tank refill and pump re-circulation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

DISCHARGE OUTLETS (Left Side)
There shall be two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter.

DISCHARGE OUTLETS (Right Side)
There shall be two (2) discharge outlets 2.50" valve on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter.

DISCHARGE OUTLET, 4.00"
There shall be a 4.00" discharge outlet with a 3.50" Akron Slo-Cloz valve with a 3.00" ball, installed on the right side of the apparatus, terminating with male a 4.00" National Standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control with position indicator at the pump operator's control panel.

DISCHARGE OUTLET (Front)
There shall be a 1.50" gated discharge outlet plumbed to the lower portion of the tray in the center front bumper extension. The outlet shall be centered near the bottom in the selected tray.

The discharge shall have a 90-degree swivel and terminate with 1.50" NHT.

Plumbing shall consist of 2.00" piping with a 2.00" full flow ball valve controlled at the pump operator's panel.

Automatic drains shall be provided at all low points in the plumbing.

DISCHARGE OUTLET (Rear)
There shall be one (1) discharge outlet piped to the rear of the hose bed, on driver's side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing shall consist of 3.00" piping along with a 3.00" full flow ball valve with the control from the pump operator's panel. The one (1) discharge outlet shall terminate with a 2.50" male National Standard hose thread adapter.

DISCHARGE CAPS
Chrome plated, rocker lug, caps with chains shall be furnished for all side discharge outlets.

The caps shall be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

OUTLET BLEEDER VALVE
A .75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails.

ELBOWS, LEFT SIDE OUTLETS
The 2.50" discharge outlets, located on the left side pump panel, shall be furnished with a 2.50"(F) National Standard hose thread x 2.50"(M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow shall be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

ELBOWS, RIGHT SIDE OUTLETS

The 2.50" discharge outlets, located on the right side pump panel, shall be furnished with a 2.50"(F) National Standard hose thread x 2.50"(M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow shall be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

ELBOWS, REAR OUTLETS
The 2.50" discharge outlets, located at the rear of the apparatus, shall be furnished with a 2.50"(F) National Standard hose thread x 2.50"(M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow shall be the VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

ELBOW, 4.00" OUTLET
The 4.00" outlet shall be furnished with a 4.00"(F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

DISCHARGE OUTLET CONTROLS
The discharge outlets shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism shall indicate the position of the valve.

If a handwheel control valve is used, the control shall be a minimum of a 3.9" diameter chrome plated handwheel with a dial position indicator built in to the center of the handwheel.

DELUGE RISER
A 3.00" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be installed securely so no movement develops when the line is charged. The riser shall be gated and controlled at the pump operator's panel. The outlet shall include an Akron valve with a handwheel control.

MONITOR
An Akron Model 3431 Apollo Hi-Riser monitor shall be properly installed on the deluge riser.

A fixed mounting base and a portable base with one (1) 4.00" storz inlet shall be provided.

A position sensor shall be provided on the monitor that shall activate the "do not move apparatus" light inside the cab when the monitor is in the raised position.

The monitor shall be painted to match the body.

NOZZLE, DELUGE
Akron model #2499 Quad Stacked pyrolite deluge tips shall be provided.

The tip sizes shall be 1.375", 1.50", 1.75", and 2.00".

This shall include an Akron 3488 pyrolite stream shaper.

The deluge riser shall have a 3.00" four (4)-bolt flange for mounting the monitor.

CROSSLAY HOSE BEDS
Two (2) crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200 feet of 1.75" double jacketed hose and shall be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls shall be at the pump operator's panel.

The center crosslay dividers shall be fabricated of .25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish. The remainder of the crosslay bed shall be painted job color.

Vertical scuffplates, constructed of stainless steel, shall be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring shall consist of removable perforated brushed aluminum.

CROSSLAY HOSE BEDS, 2.50"

One (1) crosslay with 2.50" outlets shall be provided. This bed to be capable of carrying 200 feet of 2.50" double jacketed hose and shall be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

Outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay control shall be at the pump operator's panel.

The center crosslay dividers shall be fabricated of .25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish. The remainder of the crosslay bed shall be painted job color.

Stainless steel vertical scuffplates shall be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) shall also be equipped with a stainless steel scuffplate.

Crosslay bed flooring shall consist of removable perforated brushed aluminum.

CROSSLAY 8.00" LOWER THAN STD

The crosslays shall be lowered 8.00" from standard.

FOAM PROPORTIONER

A foam proportioning system shall be provided that is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class "A" & "B" foam concentrates, including the high viscosity (6000 cps), alcohol resistant Class B foams. Operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures. The system shall automatically balance and proportion foam solution at rates from 0.1% to 9.9% regardless of variations in water pressure and flow, up to the maximum rated capacity of the foam concentrate pump.

The design of the system shall allow operation from draft, hydrant, or relay operation. This shall provide a versatile system to meet the demands at a fire scene.

System Capacity

The system shall have the ability to deliver the following minimum foam solution flow rates at accuracies that meet or exceed NFPA requirements at a pump rating of 250 PSI.

200 GPM @ 6%
400 GPM @ 3%
1200 GPM @ 1%

Class A foam setting in .1 % increments from .1% to 1%. Typical settings of 1%, .5% and .3% (Maximum capacity shall be limited to the plumbing and water pump capacity)

Control System

The system shall be equipped with a digital electronic control display located on the pump operators panel. Push button controls shall be integrated into the panel to turn the system on/off, control the foam percentage, direct which foam to use on a multi-tank system, and to set the operation modes (automatic, manual, draft, calibration, or flush).

The percent of injection shall have presets for class A and class B foam. These presets can be changed at the fire department as desired. The percent of injection shall be able to be easily changed at the scene to adjust to changing demands.

In order to minimize the use of abbreviations and interpretations, system information shall be displayed on the panel by way of .50 tall LEDs that total fourteen characters (two lines of 7 each). System on and foam pump on indicator lights shall also be included. Information displayed shall include mode of operation (automatic, manual, draft, calibration, or flush), foam supply selected (Class A or Class B), water total, foam total, foam percentage, remaining gallons, and time remaining.

The control display shall direct a microprocessor, which receives input from the systems water flow meter while also monitoring the position of the foam concentrate pump. The microprocessor shall compare the values of the water flow versus

the position/rate of the foam pump, to ensure the proportion rate is accurate. One (1) check valve shall be installed in the plumbing to prevent foam from contaminating the water pump.

Low Level, Foam Tank
The control head shall display a warning message when the foam tank in use is below a quarter tank.

Hydraulic Drive System
The foam concentrate pump shall be powered by a hydraulic drive system, which is automatically activated, whenever the vehicle water pump is engaged. A system that drives the foam pump via an electric motor shall not be acceptable. A large parasitic electric load used to power the foam pump can cause an overload of the chassis electrical system.

Hydraulic oil cooler shall be provided to automatically prevent overheating of the hydraulic oil, which is detrimental to system components. The oil/water cooler shall be designed to allow continuous system operation without allowing hydraulic oil temperature to exceed the oil specifications.

The hydraulic oil reservoir shall be of four (4) gallons minimum capacity and shall also be of sufficient size to minimize foaming and be located to facilitate checking oil level or adding oil without spillage or the need to remove access panels.

Foam Concentrate Pump
The foam concentrate pump shall be of positive displacement, self-priming; linear actuated design, driven by the hydraulic motor. The pump shall be constructed of brass body; chrome plated stainless steel shaft, with a stainless steel piston. In order to increase longevity of the pump, no aluminum shall be present in its construction.

A relief system shall be provided which is designed to protect the drive system components and prevent over pressuring the foam concentrate pump

The foam concentrate pump shall have minimum capacity for 12 gpm with all types of foam concentrates with a viscosity at or below 6000 cps including protein, fluoroprotein, AFFF, FFFP, or AR-AFFF. The system shall deliver only the amount of foam concentrate flow required, without recirculating foam back to the storage tank. Recirculating foam concentrate back to the storage tank can cause agitation and premature foaming of the concentrate, which can result in system failure. The foam concentrate pump shall be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.

External Foam Concentrate Connection
An external foam pick-up shall be provided to enable use of a foam agent that is not stored on the vehicle. The external foam pick-up shall be designed to allow continued operation after the on-board foam tank is empty. The external foam pick-up shall be designed to allow use with training foam or colored water for training purposes.

Panel Mounted Strainer / External Pick-Up Connection
A bronze body strainer / connector unit shall be provided. The unit shall be mounted to the pump panel. The external foam pick-up shall be one (1) - 1.00" male connection with chrome-plated cap integrated to a 2.00” strainer cleanout cap. A check valve shall be installed in the pick-up portion of the cleanout cap. A basket style stainless steel screen shall be installed in the body of the strainer / connector unit. Removal of the 2.00” cleanout cap shall be all that is required to gain access to and remove the stainless steel basket screen. The strainer / connector unit shall be ahead of the foam concentrate pump inlet port to insure that all agents reaching the foam pump has been strained.

Pick-Up Hose
A 1.00" flexible hose with an end for insertion into foam containers shall be provided. The hose shall be supplied with a 1.00" female swivel NST thread swivel connector. The hose shall be shipped loose.

Discharges
The foam system shall be plumbed to five (5) discharges. The discharges capable of dispensing foam shall be three crosslays, front bumper outlet, and rear 2.50" outlet..

System Electrical Load
The foam proportioning shall not impose an electrical load on the vehicle electrical system any greater than five (5) amps at 12VDC.

Tank Selector
An electric valve shall be used for the foam supply valve. The foam supply valve shall be controlled at the foam system control

head for ease of operation. The supply valve shall be electric, remote controlled, to eliminate air pockets in the foam tank supply hose.

Maintenance Message
A message shall be displayed on the control head to advise when system maintenance needs to be performed. The message shall display interval for cleaning the foam strainer, cleaning for the water strainers, and changing the hydraulic oil.

Flush System
The system shall be designed such that a flush mode shall be provided to allow the system to flush all foam concentrate with clear water. The flush circuit control logic shall ensure the foam tank supply valve is closed prior to opening the flush valve. The flush valve shall be operated at the foam system control head for ease of operation. The valve shall be electrically controlled and located as close to the foam tank supply valve as possible. A manual flush drain valve shall be labeled and located under the driver's side running board.

REFILL, SINGLE FOAM TANK
The foam system's proportioning pump shall be used to fill the Class A foam tank. This shall allow use of the auxiliary foam pick-up to pump the foam from pails or a drum on the ground into the foam tank. A foam shut-off switch shall be installed in the fill dome of the tank to shut the system down when the tank is full. The fill operation shall be controlled by a mode in the foam system controller stating TANK FILL. While the proportioner pump is filling the tank, the controller shall display FILL TANK. When the tank is full, as determined by the float switch in the tank dome, the pump shall stop and the controller shall display TANK FULL.

FOAM TANK
The foam tank shall be an integral portion of the polypropylene water tank. The cell shall have a capacity of 25 gallons of foam with the intended use of Class "A" foam. The brand of foam stored in this tank shall be Ansul. The foam cell shall not reduce the capacity of the water tank. The foam cell shall have a screen in the fill dome and a breather in the lid.

FOAM TANK DRAIN
A system of 1.00” foam tank drains shall be provided, integrated into the foam systems strainer and tank to foam pump valve management system. The tank to pump hoses running from the tank(s) to the panel mounted strainer shall 1.00” diameter. The foam system controller shall have a mode that allows for a given foam valve to be opened at will. Flow of foam from the tank valve to the strainer shall be usable as a tank drain mode.

An adaptor shall be supplied, that allows the 1.00” foam intake screen to assembly to be used as a drain outlet. The standard supplied 1.00” foam pick up hose shall be attached to the screen assembly by way of the adapter. The drain mode shall allow the operator to open and close the tank valve as required from the control head, to drain foam and re-fill foam containers through the connected hose, without foam spillage beneath the vehicle.

PUMP COMPARTMENT
The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment shall be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly.

PUMP MOUNTING
Pump shall be mounted to a substructure which shall be mounted to the chassis frame rail using rubber isolators. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump.

PUMP CONTROL PANELS (Left Side Control)
All pump controls and gauges shall be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel shall be ergonomically efficient and systematically organized.

The pump operator's control panel shall be removable in two (2) main sections for ease of maintenance:

The upper section shall contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges,

electrical switches, and foam controls (if applicable). Sub panels shall be removable from the face of the pump panel for ease of maintenance. Below the sub panels shall be located all valve controls and line pressure gauges.

The lower section of the panel shall contain all inlets, outlets, and drains.

All push/pull valve controls shall have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

IDENTIFICATION TAGS

The identification tag for each valve control shall be recessed in the face of the tee handle.
All discharge outlets shall have color coded identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges shall be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting shall be removable from the face of the pump panel for ease of maintenance. The casting shall be color coded to correspond with the discharge identification tag.

All remaining identification tags shall be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side shall be removable with lift and turn type fasteners.

Trim rings shall be installed around all inlets and outlets.

The trim rings for the side discharge outlets shall be color coded and labeled to correspond with the discharge identification tag.

PUMP PANEL CONFIGURATION

The pump panel configuration shall be arranged and installed in an organized manner that shall provide user-friendly operation.

PUMP AND GAUGE PANEL

The pump and gauge panels shall be constructed of black vinyl covered aluminum, to allow easy identification of the gauges and controls and to eliminate glare.

The black vinyl shall be bonded to the aluminum, by the company that supplies the product.

A polished aluminum trim molding shall be provided around each panel.

The passenger's side pump panel shall be removable and fastened with swell type fasteners.

Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.

- Check Transmission Warning Indicator Light

- Stop Engine Warning Indicator Light

- Check Engine Warning Indicator Light.

GAUGES, VACUUM and PRESSURE

The pump vacuum and pressure gauges shall be silicone filled and manufactured by Class 1, Inc.

The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.

Test port connections shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump,

and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked with a label.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges shall be interlube filled and manufactured by Class 1.

They shall be a minimum of 2.00" in diameter and shall have white faces with black lettering.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges shall have a pressure range of 30"-0-400#.

The individual pressure gauge shall be installed as close to the outlet control as practical.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

WATER LEVEL GAUGE

An electric water level gauge shall be incorporated in the pressure controller that registers water level by means of 9 LEDs. They shall be at 1/8 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

To further alert the pump operator, the gauge shall have a warning flash when the tank volume is less than 25%, and shall have "Down Chasing LEDs when the tank is almost empty.

The level measurement shall be ascertained by sensing the head pressure of the fluid in the tank or cell.

FOAM LEVEL GAUGE

An electronic foam level gauge shall be provided on the operator's panel that registers foam level by means of five colored LED lights. The lights shall be durable, ultra-bright five LED design viewable through 180 degrees. The foam level indicators shall be as follows:

- 100% = Green
- 75% = Yellow
- 50% = Yellow
- 25% = Yellow
- Refill = Red

The light shall flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights shall flash sequentially when the foam tank is empty.

The level measurement shall be based on the sensing of head pressure of the fluid in the tank.

The display shall be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design shall provide complete protection from foam and environmental elements. An industrial pressure transducer shall be mounted to the outside of the tank. The display shall be able to be calibrated in the field and shall measure head pressure to accurately show the tank level.

LIGHT SHIELD

The pump panel controls and gauges shall be illuminated by incandescent lights installed under an aluminum diamond plate combination step/light shield. The stepping surface shall be a minimum of 8.00" deep and properly reinforced to support a man's weight.

Illumination shall be provided for controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. External illumination shall be a minimum of five (5) foot-candles on the face of the device. Internal illumination shall be a minimum of four (4) footlamberts.

A light shall come on above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel. A pump engaged indicator shall come on at the operator's panel when

the pump is shifted into gear from inside the cab. The remaining lights to be actuated from a switch located on the pump panel.

One (1) Weldon, Model 9186-23882-30, step light shall be provided. The step light shall be installed as to illuminate the top of the step for night time vision. The step light shall be activated by the pump panel light switch.

An additional step/light shield shall be provided above passenger's side pump panel. The pump panel shall be illuminated by one (1) On Scene 36" Night Stick LED light installed under a bright aluminum treadplate step.

The step shall have a minimum of an 8.00" stepping surface and it shall be properly reinforced to support a man's weight.

The lights shall be operated from a switch on the pump panel.

One (1) Ri-Tar, Model M27HW2 LED, step light shall be provided. The step light shall be installed as to illuminate the top of the step for night time vision. The step light shall be activated by the pump panel light switch.

ELECTRICAL

All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All wiring shall be high temperature type. Wiring shall be run in loom, where exposed, and have grommets where wire passes through sheet metal. Automatic reset circuit breakers shall be provided which conform to SAE Standards. Wiring shall be color, function and number coded. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment shall be installed utilizing the following guidelines:

(1) All holes made in the roof shall be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.

(2) Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.

(3) Electrical components designed to be removed for maintenance shall not be fastened with nuts and bolts. Metal screws shall be used in mounting these devices. Also a coil of wire shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.

(4) Corrosion preventative compound shall be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation (of the plug).

(5) All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

(6) All electrical terminals in exposed areas shall have silicon (1890) applied completely over the metal portion of the terminal. All emergency light switches shall be mounted on a separate panel installed in the cab. A master warning light switch and individual switches shall be provided to allow pre-selection of emergency lights. The light switches shall be "rocker" type with an internal indicator light to show when switch is energized. All switches shall be properly identified and mounted in a removable panel for ease in servicing. Identification of the switches shall be done by either printing or etching on the switch panel. The switches and identification shall be illuminated.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, shall be furnished. Rear identification lights shall be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads shall be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests shall be recorded and provided to the purchaser at time of delivery.

STEP LIGHTS

Four (4) Ri-Tar, Model M27HW2 Super LED, step lights shall be provided. One (1) step light shall be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard.

These step lights shall be actuated with the pump panel light switch.

All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901.

REAR FMVSS LIGHTING

The rear stop/tail and directional LED lighting shall consist of the following:

Two (2) Whelen Model M6BTT red LED's as stop/tail lights.
Two (2) Whelen Model M6T amber LED's as arrow turn lights.

Each light shall be installed separately at the rear with chrome trim and colored lenses.

Four (4) red reflectors shall be provided.

A Weldon, Model 23882-2600-00, license plate bracket shall be mounted on the driver's side above the warning lights. A Weldon, Model 9186-23882-30, incandescent step lamp shall illuminate the license plate.N/A

BACKUP LIGHTS

There shall be two (2) Whelen, Model: M6BUW, LED backup lights provided in the tail light housing.

REAR ID/MARKER DOT LIGHTING

The three (3) identification lights located at the rear shall be installed per the following:

As close as practical to the vertical Centerline.
Centers spaced not less than six (6) inches or more than twelve (12) inches apart.
Red in color.
All at the same height.
One (1) Truck Lite model 15050R LED ID bar

The outside clearance lights located at the rear shall be installed per the following:

To indicate the overall width of the vehicle.
At least one (1) each side of the vertical Centerline.
All at the same height.
As near the top as practical.
To be visible from the rear and the side.
Four (4) Ri-Tar red Model M27 LED lights

Per FMVSS 108 and CMVSS 108 requirements.

LIGHTING BEZEL

There shall be two (2) Whelen, Model M6FCV4P , four (4) place chromed ABS housings with Pierce logos provided for the rear M6 series stop/tail, directional, back up, scene lights or warning lights.

LIGHT, INTERMEDIATE

There shall be one (1) pair, of Truck-Lite, Model: 60115Y, amber, LED, turn signal, marker lights furnished, one (1) each side, horizontally in the rear fender panel.

A stainless steel trim shall be included with this installation.

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light, located in the driving compartment, shall be illuminated automatically per the current NFPA requirements. The light shall be labeled "Do Not Move Apparatus If Light Is On".

The same circuit that activates the Do Not Move Apparatus indicator shall activate a steady tone alarm when the parking brake is released.

OPEN DOOR INDICATOR LIGHT

Two (2) red indicator lights shall be provided and located in clear view of the driver, warning of an open passenger or equipment compartment door.

One (1) light shall indicate status of doors on the driver's side of the vehicle and the other light shall indicate the status of the

passenger side and rear compartment doors.

COMPARTMENT LIGHTING

There shall be seven (7) compartments with Amdor LED compartment light strips. Each strip shall be centered vertically along the door framing. The compartments with these strip lights shall be located driver side lights on left side, passenger side lights on right side of compartment.. There shall be a minimum of one (1) light per compartment.

Any remaining compartments shall include 6.00" diameter Truck-Lite, Model: 79384, lights in each enclosed compartment. Each light shall have a number 1076 one filament, two wire bulb.

Opening the compartment door shall automatically turn the compartment lighting on.

PUMP COMPARTMENT LIGHT

A pump compartment light shall be provided inside the right side pump enclosure and accessible through a door on the pump panel.

A .125" weep hole shall be provided in each light lens, preventing moisture retention.

PERIMETER SCENE LIGHTS, CAB

There shall be a Truck-lite, model 44042C, 4.00", LED, grommet mount weatherproof light provided for each cab door. Lighting shall be designed to provide illumination on areas under the driver, officer, and crew cab riding area exits, which shall be activated automatically when the exit doors are opened, by the door jam switch and by the same means as the body perimeter lights.

The lighting shall be capable of providing illumination at a minimum level of two (2) foot-candles on ground areas within 30.00" of the edge of the apparatus in areas which personnel climb in or out of the apparatus or descend from the apparatus to the ground level.

PERIMETER SCENE LIGHTS, BODY

There shall be a total of four (4) Truck-Lite, Model 44042C, LED lights provided on the apparatus. Each light shall consist of a 4.00" weatherproof LED light, rubber mount, and pigtail kit.

The lights shall be mounted in the following locations:

Two (2) lights shall be provided under the rear step area.
One (1) light shall be provided each side under the pump panel running boards.

The lighting shall be capable of providing illumination at a minimum level of two (2) foot-candles on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level.

The lights shall be activated by a parking brake.

SCENE LIGHTS

There shall be two (2) Whelen, Model 90E000ZR Gradient halogen scene light(s) with chrome flange installed at the rear of the apparatus, on rear body bulkheads, directly below the M9 LED warning light..

A control for the light(s) selected above shall be the following:

a switch in the driver's side switch panel
a switch at the pump operator's panel
no additional switch location
no additional switch location

These lights may be load managed when the parking brake is set.

12 VOLT LIGHTING

There shall be two (2) Whelen Model PFP2, 12 volt LED scene light(s) installed in a recessed Model PBA203 bracket. The light(s) shall be located recessed behind crew cab doors, high as possible..

The lights selected above shall be controlled by the following:

a switch in the driver's side switch panel

a switch at the pump operator's panel
no additional switch location
no additional switch location
These lights may be load managed when the parking brake is set

12 VOLT LIGHTING
A pair of Fire Research, Optimum model OPA851-HD15, 12VDC HID lights shall be provided. The light shall be mounted on a special bracket on the front of the cab roof.

Each light heads shall be 12 volt dc, 150 watt (HID) bulb, drawing 12.5 amperes.

All wiring used shall be a minimum of 10 gauge wire in loom that is properly supported and protected from injury.

The light shall be controlled by:
From the first switch feature, a control from two (2) switches on the driver side switch panel, a driver side switch, and an officer side switch.
From the second switch feature, there is no control of this option.
From the third switch feature, there is no control of this option.

These lights may be load managed when the parking brake is set.

PORTABLE HAND LIGHTS, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, section 5.8.3 requires two portable hand lights mounted in brackets fastened to the apparatus.

The hand lights are not on the apparatus as manufactured. The fire department shall provide and mount these hand lights.

HAND HELD LIGHT
There shall be 12v Streamlight, Model #44401, Fire Vulcan, lights mounted to the left of the officer on the engine tunnel. There shall be one (1) light provided.

Each light housing shall be orange in color and be provided with a single filament halogen bulb and two "ultra bright blue taillight LEDs" The LEDs shall have a dual mode (blinking or steady).

AIR HORN SYSTEM
Two (2) Grover air horns shall be provided and located, in the front bumper, recessed recessed in front bumper, outside frame rails.. The horn system shall be piped to the air brake system wet tank utilizing .38" tubing. A pressure protection valve shall be installed in-line to prevent loss of air, in the air brake system.

AIR HORN CONTROL
The air horns shall be actuated by a push button located on officer side instrument panel and by the horn button in the steering wheel. The driver shall have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

ELECTRONIC SIREN
A "Code 3", model 3692, electronic siren with noise canceling microphone shall be provided.

ELECTRIC SIREN, LOCATION,
Siren head shall be mounted recessed in switch panel number #5.

The electronic siren shall be controlled on the siren head only. No horn button or foot switches shall be required.

SPEAKER
There shall be one (1) speaker, Code-3 Model PB100C with chrome finish provided. Connection shall be connected to the siren amplifier.

The speaker(s) shall be recessed in the front bumper on the passenger's side.

ELECTRONIC SIREN, (Auxiliary)
A Federal, model E-Q2B, electronic siren with noise canceling microphone shall be provided.

The auxiliary siren shall be controlled from the remote siren head only.

AUXILIARY SPEAKER
There shall be one (1) recessed in the front bumper, As maybe possible.

The speaker to be supplied shall be a Federal, Model: BP200-EF, 200 watt.

This speaker shall be connected to the auxiliary electronic siren.

WARNING LIGHTS
A Whelen Freedom, Model: FN38QLED lightbar shall be mounted on the cab roof.

The length shall be 82.00"

The lightbar shall include the following:
Six (6) red flashing forward facing LED modules.
Two (2) clear flashing forward facing LED modules.
Two (2) red flashing front corner LED modules.
One (1) red flashing driver end LED module.
One (1) red flashing pass end LED module.

All the lenses shall be clear.

One (1) switch located in the cab, on the switch panel, shall control this lightbar.

To meet NFPA requirements, the clear warning lights shall be disabled when the parking brake is set.

HEADLIGHT FLASHER
The high beam headlights shall flash alternately between the left and right side, with a control switch located on the cab instrument panel.

The flashing shall automatically cancel when the headlight switch is activated or when the parking brake is set.

SIDE ZONE LOWER LIGHTING
Six (6) Whelen Model M6* LED flashing warning lights with bezels shall be located in the following positions:
Two (2) lights, one (1) each side on the bumper extension.
The side front lights to be red.
Two (2) lights, crew cab extension one each side.
The side middle lights to be red.
Two (2) lights, Center over rear wheels.
The side rear lights to be red.
All six (6) lights shall include a lens that is the same color of the LED's.
All six (6) lights shall be controlled by a lighted switch on the cab switch panel.

INTERIOR CAB DOOR WARNING LIGHTS
Four (4) Whelen 500 LED flashing lights shall be provided. One (1) light shall be located inside of each cab and crew cab door pan. Each light shall be activated by the door jam switch of the associated door. The color of the lights shall be amber. The lights shall alternately flash whenever the corresponding door is open. These lights shall be mounted in a Whelen flange.

REAR ZONE LOWER LIGHTING
Two (2) Whelen, Model M6* LED flashing warning lights with bezels shall be located at the rear of the apparatus.
The driver's side rear light to be red.
The passenger's side rear light to be red.
Both lights shall include a lens that is the same color as the LED's.
Both lights shall be controlled by a lighted switch on the switch panel.

WARNING LIGHTS (Rear)
There shall be two (2) Whelen Model M9* LED flashing warning light(s) with bezel(s) provided One each side high on rear

bulkhead wall.

The color of these light(s) shall be red.

These light(s) shall be controlled with the rear upper warning switch.

These light(s) shall include a lens that is the same color as the LED's.

WARNING LIGHTS (Rear of Hose Bed)
Two (2) Whelen L31H*FN LED warning beacons shall be provided at the rear of the truck, located one (1) each side. These lights shall be activated by a lighted switch on the instrument panel.

The color of the lights shall be red LEDs with both domes red.

The rear warning lights shall be mounted on top of the compartmentation with all wiring totally enclosed. The rear deck lights shall be mounted on the beavertails high as possible.

TRAFFIC DIRECTING LIGHT
There shall be one (1) 911EP model TD36A, 34.12" long x 1.44" high x 1.47" deep, amber LED traffic directing light installed at the rear of the apparatus.

A Orion model Director switch box shall be included with this installation.

This traffic directing light shall be recessed with a stainless steel trim plate at the rear of the apparatus as high as practical.

The traffic directing light control head shall be located in the driver side overhead switch panel in the right panel position.

ELECTRICAL SYSTEM GENERAL DESIGN for ALTERNATING CURRENT
The following guidelines shall apply to the 120/240 VAC system installation:

General
Any fixed line voltage power source producing alternating current (ac) line voltage shall produce electric power at 60 cycles plus or minus 5 cycles.

Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures shall conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus shall be listed and installed in accordance with the manufacturer's instructions. All products shall be used only in the manner for which they have been listed.

Grounding
Grounding shall be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding.

An equipment grounding means shall be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. This conductor shall have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements shall be permitted to be used.

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

Operation
Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Provisions shall be made for quickly and easily placing the power source into operation. The control shall be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train shall be equipped with a means to prevent the unintentional movement of the control device from its set position.

A power source specification label shall be permanently attached to the apparatus near the operator's control station. The label shall provide the operator with the information detailed in Figure 19-4.10.

Direct drive (PTO) and portable generator installations shall comply with Article 445 (Generators) of the NEC.

Overcurrent protection
The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 144 inches. (3658 mm) in length.

For fixed power supplies, all conductors in the power supply assembly shall be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degree Fahrenheit (90 degrees Celsius).

For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device shall be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius).

Wiring Methods
Fixed wiring systems shall be limited to the following:

- Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)
  or
- Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring shall be run as follows.

- Separated by a minimum of 12 inches (305 mm), or properly shielded, from exhaust piping

- Separated from fuel lines by a minimum of six (6) inches (152 mm) distance.

Electrical cord or conduit shall be supported within six (6) inches (152 mm) of any junction box and at a minimum of every 24 inches (610 mm) of continuous run. Supports shall be made of nonmetallic materials or corrosion protected metal. All supports shall be of a design that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle.

Wiring Identification
All line voltage conductors located in the main panel board shall be individually and permanently identified. The identification shall reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends shall be labeled showing function and wire size.

Wet Locations
All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, shall be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location shall be not less than 24 inches (610 mm) from the ground. Receptacles on off-road vehicles shall be a minimum of 30 inches (762 mm) from the ground.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle shall be installed in a face up position.

Dry Locations

All receptacles located in a dry location shall be of the grounding type. Receptacles shall be not less than 30 inches (762 mm) above the interior floor height.

All receptacles shall be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they shall be so marked.

Listing
All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages shall be rated for the appropriate service.

Electrical System Testing
The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900-volts for one (1) minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

Operational Test per Current NFPA 1901 Standard
The apparatus manufacturer shall perform the following operation test and ensure that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order. The test shall be witnessed and the results certified by Underwriters Laboratories.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The power source shall be operated at 100 percent of its nameplate voltage for a minimum of two (2) hours unless the system meets category certification as defined in the current NFPA 1901 standard.

Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in the current NFPA 1901 standard shall be applied to the low voltage electrical system during the operational test.

GENERATOR
The apparatus shall be equipped with a complete AC (alternating current) electrical power system. The generator shall be a Harrison Model 6.0MAS-16R/D-11011/15/1, 6,000 watt hydraulic driven unit.

The generator shall be driven by a transmission power take off unit, through a hydraulic pump and motor.

The hydraulic engagement supply shall be operational at any time (no interlocks)N/A.

An electric/hydraulic valve shall supply hydraulic fluid to the clutch engagement unit provided on the chassis PTO drive.

Generator Instruments and Controls
To properly monitor the generator performance a digital meter panel shall be furnished and mountedN/A near the circuit breaker panel.

GENERATOR LOCATION
The generator shall be mounted in the over pump house passenger side. The flooring in this area shall be either reinforced or constructed, in such a manner, that it shall handle the additional weight of the generator.

GENERATOR START
A switch shall be located on the cab instrument panel to engage the generator.

GENERATOR REMOTE START
Remote start switches shall be provided in the cab switch panel and near the circuit breaker box to engage the hydraulic generator. A light at each switch location shall be provided to indicate that the generator is running.

CIRCUIT BREAKER PANEL
The circuit breaker panel shall be located TBD.

20 AMP RECEPTACLE
Wired to the power supply shall be two (2) receptacles that are a 120 volt 20 amp three wire twist-lock type, Marine Grade NEMA L5-20 Hubbell Model 23CM10 with weather resisting cover located One in D1 and One in P1 mounted on front bulkhead wall six inches off the floor.

KUSSMAUL AUTO EJECT FOR SHORELINE
one (1) shoreline receptacle shall be provided to operate the dedicated 120-volt circuits on the truck without the use of the generator.

The shoreline receptacle (s) shall be provided with a NEMA 5-20, 120 volt, 20 amp, straight blade Kussmaul Super auto eject plug with a red weatherproof cover. The cover is spring loaded to close, preventing water from entering when the shoreline is not connected.

The unit is completely sealed to prevent road dirt contamination.

A solenoid wired to the vehicle's starter is energized when the engine is started. This instantaneously drives the plug from the receptacle.

An internal switch arrangement shall be provided to disconnect the load prior to ejection to eliminate arcing of the connector contacts.

The shoreline shall be connected to battery charger.

A mating connector body shall also be supplied with the loose equipment.

The shoreline receptacle shall be located over the driver side front wheel.

LOOSE EQUIPMENT
The following equipment shall be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit

One (1) set of reflective emergency triangles shall be provided.

NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT
The following loose equipment as outlined in NFPA 1901, 2009 edition, section 5.8.2 and 5.8.3 shall be provided by the fire department. All loose equipment shall be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

- 800 ft (60 m) of 2½" (65 mm) or larger fire hose.

- 400 ft (120 m) of 1½" (38 mm), 1¾" (45 mm), or 2" (52 mm) fire hose.

- One (1) handline nozzle, 200 gpm (750 L/min) minimum.

- Two (2) handline nozzles, 95 gpm (360 L/min) minimum.

- One (1) playpipe with shutoff and 1" (25 mm), 1 1/8" (29 mm), and 1¼" (32 mm) tips.

- One (1) SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*, for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.

- One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).

- One (1) first aid kit.

- Four (4) combination spanner wrenches mounted in bracket(s) fastened to the apparatus.

- Two (2) hydrant wrenches mounted in brackets fastened to the apparatus.

- Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device).

- One (1) double female 2½" (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.

- One (1) double male 2½" (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.

- One (1) rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus.

- Two (2) salvage covers each a minimum size of 12 ft × 14 ft (3.7 m × 4.3 m).

- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front.

- Five (5) fluorescent orange traffic cones not less than 28" (711 mm) in height, each equipped with a 6" (152 mm) retro-reflective white band no more than 4" (152 mm) from the top of the cone, and an additional 4" (102 mm) retro-reflective white band 2" (51 mm) below the 6" (152 mm) band.

- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.

- One automatic external defibrillator (AED).

- If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

- If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

- If the apparatus does not have a 2½" National Hose (NH) intake, an adapter from 2½" NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

- If the supply hose carried has other than 2½" National Hose (NH) threads, adapters shall be carried to allow feeding the supply hose from a 2½" NH thread male discharge and to allow the hose to connect to a 2½" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 5.7.2 requires a minimum of 20 ft of suction hose or 15 ft of supply hose.

Hose is not on the apparatus as manufactured. The fire department shall provide suction or supply hose.

- One (1)-6.00" National Standard hose thread barrel strainer, chrome plated

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 5.8.3 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 5.8.3 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

AXE, FLATHEAD, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.

AXE, PICKHEAD, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.

PAINT
The exterior custom cab and body painting procedure shall consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Surfaces that shall not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate. Each imperfection on the exterior metal surface shall be removed or filled and then sanded smooth for a smooth appearance. All seams shall be sealed before painting.

2. Chemical Cleaning and Treatment - The metal surfaces shall be properly cleaned using a high pressure and high temperature cleaning system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse shall be applied to all metal surfaces at the conclusion of the metal treatment process.

3. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer shall be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface.

4. Hand Sanding - The primer/surfacer coat shall be lightly sanded to an ultra smooth finish.

5. Sealer Primer Coat - A two (2) component sealer primer coat shall be applied over the sanded primer.

6. Topcoat Paint - Urethane base coat shall be applied to opacity for correct color matching.

7. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane shall be applied. Lap style doors shall be clear coated to match the body. Roll-up doors shall not be clear coated and the standard roll-up door warranty shall apply.

All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure paint behind all mounted items. Body assemblies that can not be finish painted after assembly shall be finish painted before assembly.

The cab shall be two-tone, with the upper section painted white #10 and lower section of the cab and body painted Paint Color Red #90.

PAINT - ENVIRONMENTAL IMPACT
Contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. Controls shall include the following conditions:

- Topcoats and primers must be chrome and lead free.

- Metal treatment chemicals must be chrome free. The wastewater generated in the metal treatment process must be treated on-site to remove any other heavy metals.

- Particulate emission collection from sanding operations must have a 99.99% efficiency factor.

- Particulate emissions from painting operations must be collected by a dry filter or water wash process. If the dry filter means is used, it must have an efficiency rating of 98.00%. Water wash systems must be 99.97% efficient.

- Water from water wash booths must be reused. Solids shall be removed mechanically on a continual basis to keep the water clean.

- Paint wastes are disposed of in an environmentally safe manner. They are used as fuel in kilns used in the cement manufacturing process - thereby extracting energy from a waste material.

- Empty metal paint containers must be cleaned, crushed and recycled to recover the metal.

- Solvents used in cleanup operations must be collected, recycled on-site, or sent off-site for distillation and returned for reuse. Residue from the distillation operation shall be used as fuel in off-site cement kilns.

Additionally, the finished apparatus shall not be manufactured with or contain products that have ozone depleting substances. Contractor shall, upon demand, present evidence that his manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY
The chassis frame assembly shall be painted job color before the installation of the cab and body, and before installation of the engine, drive shafts and transmission assembly, air brake lines, electrical wire harnesses, etc. Components that are included with the chassis frame assembly that shall be painted job color are frame rails, cross members, axles, suspension, steering gear, fuel tank, body substructure supports, miscellaneous mounting brackets, etc.

WARRANTY - PAINT AND CORROSION
The cab and body exterior paint finish shall be warranted against blistering, peeling, corrosion, lack of adhesion or any other manufacturing or material defect for a period of **ten (10) years**.

The cab and body shall also be warranted against corrosion perforation for a period of **ten (10) years**.

A copy of the manufacturer's warranty shall be included with the bid.

PAINT, COMPARTMENT INTERIOR
Interior of compartmentation shall be painted with a gray spatter type paint.

REFLECTIVE STRIPES
Three (3) reflective stripes shall be provided across the front of the vehicle and along the sides of the body. The reflective band shall consist of a 1.00" white stripe at the top with a 1.00" gap then a 6.00" white stripe with a 1.00" gap and a 1.00" white stripe on the bottom.

The reflective band provided on the cab face shall be located below the stainless steel trim band and the front bumper.

CHEVRON STRIPING, REAR
There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The entire rear surface, excluding the rear compartment door, shall be covered.

The colors shall be red and fluorescent yellow green diamond grade.

Each stripe shall be 6.00" in width.

This shall meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface shall be covered with chevron striping.

OUTLINE, REFLECTIVE STRIPE
A Black outline shall be applied on the top and the bottom of the reflective band. There shall be three (3) set of outline stripes required.

CHEVRON STRIPING ON REAR ROLL UP COMPARTMENT
There shall be alternating chevron striping located on the rear roll up door.

The colors shall be red and fluorescent yellow green diamond grade.

Each stripe shall be 6.00" in width.

REFLECTIVE STRIPE, CAB DOORS
A 6.00" x 16.00" white reflective stripe shall be provided across the interior of each cab door. The stripe shall be located approximately 1.00" up from the bottom, on the door panel.

This stripe shall meet the NFPA 1901 requirement.

GOLD LEAF STRIPE, BODY
A gold leaf stripe shall be provided on each side of the body, located along the top of the side compartmentation.

GOLD LEAF STRIPE, BODY
A gold leaf stripe shall be provided on each side of the body, located along the bottom of the compartment doors.

BODY STRIPE
A gold leaf stripe shall be provided on each side of the body, low over the fender and along the bottom of the compartment doors. It shall include black outline with an accent stripe.

CAB STRIPE
There shall be one (1) gold leaf stripe located just below the window line on each side of the cab.

GOLD LEAF STRIPE ON THE CAB
There shall be one (1) gold leaf stripe on each side of the cab, along the bottom edge of the cab doors.

GOLD LEAF STRIPE ON THE CAB
There shall be one (1) gold leaf stripe on each side of the cab, low and over the fender. It shall include black outline with an accent stripe.

LETTERING
The lettering shall be totally encapsulated between two (2) layers of clear vinyl.

LAMINATION WARRANTY
The manufacturer shall provide a **three (3) year** warranty against defects in material and workmanship with the graphics process. A copy of the fire apparatus manufacturer's warranty shall be included with the bid.

LETTERING
Sixty-one (61) to eighty (80) genuine gold leaf lettering, 3.00" high, outlining and double color shading shall be provided.

UNDERCOATING, CAB & BODY (FOR STOCK/DEMO UNITS ONLY)

The apparatus shall be properly treated by an authorized Ziebart dealer.

The underside of the apparatus shall be undercoated with an asphalt petroleum based material, dark in color.

The undercoating material utilized on the apparatus shall be formulated to resist corrosion and deaden unwanted sound or road noise.

Coating texture shall appear firm, flexible, and resistant to abrasion. Minimum dry film thickness shall be in the range of 8.00 to 12.00 mils.

The material shall be applied to the following areas:

-Body and cab wheel well fender liners, on the back side only.
-Underside of body and cab sheet metal, and structural components.
-Underside and vertical sides of all sheet metal compartmentation, including support angles.
-Structural support members under running boards, rear platforms, battery boxes, walkways, etc.
-Inside surfaces of the pump heat enclosure, (when installed).
-Suspension mounts

-Transmission cooler fittings
-Engine mounts.
-Bottom of torque boxes (if applicable)

Exclusions shall be:

-Engine
-Transmission
-Drive lines
-PTO's
-Stabilizer controls (Aerials)
-Proximity Switches (Aerials)
-Schroeder valves and tank drains
-Intake valves
-Air Horns, sirens and back-up alarms

END OF SECTION

CITY OF NEWTON
BIDDER'S QUALIFICATIONS AND REFERENCES FORM

All questions must be answered, and the data given must be clear and comprehensive. Please type or print legibly. If necessary, add additional sheet for starred items. This information will be utilized by the City of Newton for purposes of determining bidder responsiveness and responsibility with regard to the requirements and specifications of the Contract.

1. FIRM NAME: _____

2. WHEN ORGANIZED: _____

3 INCORPORATED? ☐ YES ☐ NO DATE AND STATE OF INCORPORATION: _____

* 4. LIST ALL CONTRACTS CURRENTLY ON HAND, SHOWING CONTRACT AMOUNT AND ANTICIPATED DATE OFCOMPLETION:

_____

_____

_____

_____

_____

* 5. HAVE YOU EVER FAILED TO COMPLETE A CONTRACT AWARDED TO YOU?
☐ YES ☐ NO
IF YES, WHERE AND WHY?

_____

_____

* 6. HAVE YOU EVER DEFAULTED ON A CONTRACT? ☐ YES ☐ NO
IF YES, PROVIDE DETAILS.

_____

_____

* 7. LIST YOUR VEHICLES/EQUIPMENT AVAILABLE FOR THIS CONTRACT:

_____

_____

_____

_____

_____

_____

* 8. IN THE SPACES FOLLOWING, PROVIDE INFORMATION REGARDING CONTRACTS COMPLETED BY YOUR FIRM SIMILAR IN NATURE TO THE PROJECT BEING BID. A MINIMUM OF FOUR (4) CONTRACTS SHOULD BE LISTED. PUBLICLY BID CONTRACTS ARE PREFERRED, BUT NOT MANDATORY.
PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICALY BID? ☐ YES ☐ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: ____)_____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

_____

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICALY BID? ÍYES Í NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____)_____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

_____

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICALY BID? ÍYES Í NO
TYPE OF WORK?: _____
CONTACT PERSON:_____ TELEPHONE #: (____)_____
CONTACT PERSON'S RELATION TO PROJECT?:_____
(i.e., contract manager, purchasing agent, etc.)

_____

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICALY BID? ÍYES Í NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #:(____)_____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

9. The undersigned certifies that the information contained herein is complete and accurate and hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Newton in verification of the recitals comprising this statement of Bidder's qualifications and experience.

DATE: _____ BIDDER: _____

SIGNATURE: _____

PRINTED NAME: _____ TITLE: _____

END OF SECTION

CITY OF NEWTON, MASSACHUSETTS
PURCHASING DEPARTMENT

GENERAL TERMS AND CONDITIONS

1. The right is reserved to reject any and all bids, to waive informalities, and to make award as may be determined to be in the best interest of the City of Newton.

2. Prices quoted must include delivery to the City , as specified on the Purchase Order.

3. No charges will be allowed for packing, crating, freight, Express or cartage unless specifically stated and included in the bid.

4. The award to the successful bidder may be canceled if successful bidder shall fail to prosecute the work with promptness and diligence.

5. Time in connection with discount offered will be computed from the date of delivery to the City, as specified on purchase order, or from date correct invoice is received by the City, if the latter date is later than the date of delivery.

6. The sucessful bidder shall replace, repair or make good, without cost to the City, any defects or faults arising within one (1) year after date of acceptance of articles furnished hereunder (acceptance not to be unreasonably delayed) resulting from imperfect or defective work done or materials furnished by the Sellor.

7. The Sellor shall indemnify and save harmless the City and all persons acting for on behalf of it from all suits and claims against them, or any of them, arising from or occasioned by the use of any material, equipment or apparatus, or any part thereof, which infringes or is alleged to infringe on any patent rights. In case such material, equipment or apparatus, or any part thereof, in any such suit is held to constitute infringement, the Seller, within a reasonable time, will at it's expense, and as the City may elect, replace such material, equipment or apparatus with non-infringing material, equipment or apparatus, or remove the material, equipment or apparatus, and refund the sums paid therefor.

8. The successful bidder shall comply with all applicable Federal State and Local laws and regulations.

9. Purchases made by the City are exempt from Federal excise taxes and bid prices must exclude any such taxes. Tax exemption certificates will be furnished upon request.

10. If so stated in the Invitation For Bid the successful bidder will be required to furnish a performance and/or a labor and material payment bond, in an amount, in a form and with a surety satisfactory to the City. The bidder shall be responsible for the cost of the bond(s).

11. If the Invitation for Bids requires bid surety, this surety shall be in the form of a cash, bid bond, cahsier's check, treasurer's check, or certified check on a responsible bank, payable to the City of Newton, and must be filed with the original bid in the Office of the Chief Procurement Officer. Failure to do so will lead to rejection of bid. The bid surety will be returned to the sucessful bidder within seven (7) days execution of awarded, and approval by the City of performance and/or payment bond(s). In case of default, the bid surety shall be forfeited to the City.

12. Verbal orders are not binding on the City and deliveries made or work done without formal Purchase Order or Contract are at the risk of the Sellor or Contractor and may result in an unenforceable claim.

13. The Sellor shall agree to indemnify, defend and hold the City harmless from any and all claims arising out of the performance of this contract.

14. "Equality - An item equal to that named or described in the specifications of the contract may be furnished by the Vendor and the naming of any commercial name, trademark or other identification shall not be construed to exclude any item or manufacturer not mentioned by name or as limiting competition but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design; (2) it will perform at least equally the function imposed by the general design for the work being contracted for or the material being purchased; and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the specifications. The name and identification of all materials other than the one specifically

named shall be submitted to the City in writing for approval, prior to purchase, use or fabrication of such items. Subject to the provisions of M.G.L., Ch. 30, Sec. 39J, approval shall be at the sole discretion of the City, shall be in writing to be effective, and the decision of the City shall be final. The City may require tests of all materials so submitted to establish quality standards at the Vendor's expense. All directions, specifications and recommendations by manufacturers for installation, handling, storing, adjustment and operation of their equipment shall be complied with; responsibility for proper performance shall continue to rest with the Vendor.

For the use of material other than the one specified, the Vendor shall assume the cost of and responsibility for satisfactorily accomplishing all changes in the work as shown. If no manufacturer is named, the Vendor shall submit the product he intends to use for approval of the City.

Except as otherwise provided for by the provisions of M.G.L., Ch. 30, Sec. 39J, the Vendor shall not have any right of appeal from the decision of the City condemning any materials furnished if the Vendor fails to obtain the approval for substitution under this clause. If any substitution is more costly, the Vendor shall pay for such costs."

15. Notice is hereby given that the Mayor's Affirmative Action Plan for the Cit y of Newton, dated July 1995 Applicable to all contract in excess of $10,000.00 A copy of this plan is on file at the City of Newton, Purchasing Dept. This paragraph applies to City of Newton purchases only.

16. Notice is hereby given that the City of Newton Minority/Women Business Enterprise Plan dated December 1999 is applicable to all City of Newton contracts for materials and supplies. A copy of this plan may be obtained from the Purchasing Department.

17. Right To Know:

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L., Ch. 111F, SS8, 9 and 10 and the regulations contained in 441 CMR SS 21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. Ch. 111F, SS 7 and the regulations contained in 441 CMR SS 21.05. Failure to submit an MSDS and/or label on each container will place the vendor in noncompliance with the purchase order. Failure to furnish MSDSs and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the vendor from selling said substances or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 111F of the M.G.L. are cautioned to obtain and read the law and rules and regulations referred to above. Copies can be obtained from the State House Book Store, Secretary of State, State House, Room 117, Boston, MA 02133, (617-727-2834) for $2.00 plus $.65 postage.

FAILURE TO COMPLY WITH THESE TERMS AND CONDITIONS COULD RESULT IN THE CANCELLATION OF YOUR CONTRACT.

CONTRACT FORMS

The forms are provided for informational purposes only.

The awarded bidder will be required to complete and submit the following documents in order to execute a contract pursuant to this bid.

None of the following forms are required at the time of bid submittal.

CITY OF NEWTON
CITY – CONTRACTOR AGREEMENT
#C - XXXX

This contract made by and between

Party of the first part, hereinafter referred to as " The Company" and the **City of Newton**, a municipal corporation organized and existing under the laws Of the Commonwealth of Massachusetts, party of the second part, hereinafter referred to as "The Buyer" or "the City", Acting through its Fire Chief and Chief Procurement Officer, but without personal liability to them.

Witnesseth the parties hereto for the considerations hereinafter set forth agree as follows:

1. The company agrees to sell, upon the conditions written below, vehicle and equipment in accordance with City of Newton Invitation For Bid #10-24 and the company's response thereto, which are hereby incorporated by reference and made as fully a part of this agreement and contract as is fully reproduced herein.

2. In the event that the company's equipment specifications, contained in its response and the equipment specifications contained in the buyer's Invitation For Bid are in conflict with one another, the company's specifications shall apply. In the event any provision(s) of the buyers Invitation For Bid and/or the company's response conflict(s) with any provision(s) of this contract, the parties intend to be bound by the provisions of this contract.

3. All applicable Federal, State and Local laws and regulations are incorporated herein by reference and the contractor agrees to comply with the same.

4. The said vehicle and equipment shall be delivered by the company within approximately 90 calendar days following receipt of this award. Delivery shall be subject to delays due to strikes, materials availability and other causes that could be anticipated and are beyond the company's control. A penalty fee of $250.00 per calendar beyond the delivery date shall be imposed upon the contractor. Vehicle and equipment shall be accepted by the buyer, F.O.B. Newton, Massachusetts, including all applicable Federal and State taxes. If the buyer of the product is exempt from taxes, it shall be the responsibility of the buyer to provide a tax exempt certificate acceptable to the company.

5. If full acceptance tests are required to be performed at the buyer's location, such tests shall be made upon arrival at destinations, while the vehicles is in the care, custody, and control of the company.

6. For the purposes of inspection of the equipment, materials and supplies covered by this contract, the company shall give the buyer free access to the company's works and furnish every facility for properly inspecting such equipment, materials and supplies, and shall furnish full information, whenever requested, relating thereto. Approval by any inspector of the City shall not relieve the company from its obligation to comply in all respects with the contract.

7. All contracts are taken subject to the written acceptance of_____., by an officer of the company. When requested, the buyer shall furnish satisfactory opinion of the buyer's Attorney as to the power of the buyer to enter into said contract, and that said contract is valid, legal and enforceable obligation of the buyer, and that the official executing the contract for the buyer has the authority to do so.

8. This agreement embodies the entire understanding between the parties relating to the subject matter contained herein, and merges all prior discussions and agreements between them. No agent or representative of the company has the authority to make any representations, statements or agreements not expressed herein. All modifications or amendments of this contract, including it's appendices, must be in writing and must be signed by an authorized representative of each party.

9. The vehicle is subject to limited warranties as provided by the manufacturers of both the completed vehicle and its components. Copies of major component warranties shall be provided on delivery.

10. The company agrees, unless otherwise specified, that all equipment, materials and supplies furnished under this contract are to be first quality, new and unused.

11. The company agrees to assume the defense of and shall indemnify and save harmless the buyer and all persons acting for or on behalf of it from all suits and claims against them, or any of them, arising from or occasioned by the use of any material, equipment or apparatus, or any part thereof which infringes or is alleged to infringe on any patent rights. In case such material, equipment or apparatus, or any part thereof, in any such suit is held to constitute infringement, the company, within a reasonable time, shall at its own expense, and as the buyer may elect, replace such material, equipment or apparatus with non-infringing material, equipment or apparatus, or remove the material, equipment or apparatus and refund the sums paid therefor.

12. The company reserves the right to make product improvements without notice.

13. There shall be no less than four (4) days of training provided by the manufacturer with a training engineer. A total of four (4) days of Driver training shall be provided.

14. Apparatus paint color(s) shall be:

BODY:	RED
CAB:	RED/WHITE
CAB ROOF:	WHITE

15. The vehicle being purchased shall comply to NFPA 2004 standard to the extent the attached specifications permit. If an item in one of these standards is not supplied with or designed into the vehicle, it is because the buyer did not desire to include it on the vehicle.

16. All threads provided on the vehicle or on supplied equipment shall be NST, unless noted to the contrary.

17. The buyer agrees to pay as purchase price for the vehicle, accepted as aforesaid, the sum of:

($)

18. Payment terms: two payments shall be made in the following manner:

    $– 1st payment upon completion and inspection of chassis (VIN# shall appear on invoice)
    $– final payment upon delivery and acceptance of the vehicle. The manufacturer's statement of origin for the vehicle shall be presented to the buyer upon payment.

19. In the performance of any work, including the delivery of equipment, materials or supplies, pursuant to this contract, the company shall take all responsibility for the work being performed under this contract, and shall take all precautions for preventing injuries to persons and property in or about the work and shall defend, indemnify and hold the buyer harmless from all loss, cost, damage or expense arising from injuries to persons or property in or about the work. The company shall be responsible for any damage which may be caused by the failure or insufficiency of any temporary works. The company shall effectively protect its work, and in particular shall take care to prevent loss or damage to the vehicle prior to its delivery to the buyer and shall be liable for all damage and loss by delay or other wise caused by its neglect or failure so to do.

20. The seller shall provide the buyer with a Performance Bond for 100% of the amount of the contract total.

21. The buyer may, by written notice of default to the company, terminate the whole or any part of this contract pursuant thereto in any one of the following circumstances:

    a. If the company fails to make delivery of the equipment, goods or supplies or to perform the services within the time specified herein or any extension thereof;

    b. If the company fails to perform any of the other provisions of this contract or, if in the opinion of the buyer, company so fails to make progress as to endanger performance of this contract in accordance of this contract in accordance with its terms, and in either of these two circumstances does not correct such

failure within thirty (30) days (or such longer period as the buyer may authorize in writing) after receipt of notice from the buyer specifying such failure.

22. The provisions of this contract are severable. If any section, paragraph, clause or provision of this contract shall be finally adjudicated by a court of competent jurisdiction to be invalid, the remainder of this contract shall be unaffected by such adjudication and all of the remaining provisions of this contract shall remain in full force and effect as though such section, paragraph, clause or provision, or any part thereof so adjudicated to be invalid, had not been included herein, unless such remaining provisions, standing alone, are incomplete and incapable of being executed in accordance with the intent of the parties to this contract.

23. This contract shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed under seal the day and year first above written.

CONTRACTOR

By_____
Title_____

Date_____

Affix Corporate Seal here

City funds in the amount of $_____
Are available in account number
_____

I further certify that the Mayor is authorized to execute contracts and approve change orders

By_____
Comptroller of Accounts

Date _____

CITY OF NEWTON

By _____
Chief Procurement Officer

Date_____

By_____
Fire Chief

Date_____

Approved as to Legal Form and Character

By_____
Associate City Solicitor

Date_____

CONTRACT AND BONDS APPROVED

_____
David B. Cohen, MAYOR

Date_____

CERTIFICATE OF AUTHORITY - CORPORATE

1. I hereby certify that I am the Clerk/Secretary of _____
(insert full name of Corporation)

2. corporation, and that _____
(insert the name of officer who signed the **contract and bonds**.)

3. is the duly elected _____
(insert the title of the officer in line 2)

4. of said corporation, and that on _____
(insert a date that is ***ON OR BEFORE*** the date the officer signed the **contract and bonds**.)

at a duly authorized meeting of the Board of Directors of said corporation, at which all the directors were present or waived notice, it was voted that

5. _____ the _____
(insert **name** from line 2) (insert **title** from line 3)

of this corporation be and hereby is authorized to execute contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

6. ATTEST: _____ *AFFIX CORPORATE SEAL HERE*
(Signature of **Clerk or Secretary**)*

7. Name: _____
(Please print or type name in line 6)*

8. Date: _____
(insert a date that is ***ON OR AFTER*** the date the officer signed the **contract and bonds**.)

* The name and signature inserted in lines 6 & 7 **must** be that of the **Clerk or Secretary** of the corporation.

ATTESTATION

Pursuant to MG c. 62C, § 49A, the undersigned acting on behalf of the Contractor, certifies under the penalties of perjury that, to the best of the undersign's knowledge and belief, the Contractor is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.*

_____ _____

**Signature of Individual
or Corporate Contractor (Mandatory)

*** Contractor's Social Security Number
(Voluntary) or Federal Identification Number

By: _____ Date: _____
Corporate Officer
(Mandatory, if applicable)

* The provision in the Attestation relating to child support applies only when the Contractor is an individual.

** Approval of a contract or other agreement will not be granted unless the applicant signs this certification clause.

*** Your social security number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended. This request is made under the authority of GL c. 62C, § 49A.

CITY OF NEWTON, MASSACHUSETTS

PERFORMANCE BOND

Know All Men By These Presents:

That we,_____, as PRINCIPAL, and , as SURETY, are held and firmly bound unto the City of Newton as Obligee, in the sum of _____ dollars ($_____) to be paid to the Obligee, for which payments well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the said PRINCIPAL has made a contract with the Obligee, bearing the date of _____, 20_____, for the construction of

_____

(Project Title)

in Newton, Massachusetts.

Now, the condition of this obligation is such that if the PRINCIPAL and all Sub-contractors under said contract shall well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of said contract on its part to be kept and performed during the original term of said contract and any extensions thereof that may be granted by the Obligee, with or without notice to the SURETY, and during the life and any guarantee required under the contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations, changes or additions to said contract that may hereafter be made, notice to the SURETY of such modifications, alterations, changes or additions being hereby waived, then this obligation shall become null and void; otherwise, it shall remain in full force, virtue and effect.

In the event, that the contract is abandoned by the PRINCIPAL, or in the event that the Obligee terminates the employment of the PRINCIPAL or the authority of the PRINCIPAL to continue the work said SURETY hereby further agrees that said SURETY shall, if requested in writing by the Obligee, take such action as is necessary to complete said contract.

In Witness Whereof, the PRINCIPAL and SURETY have hereto set their hands and seals this day of _____,20_____.

PRINCIPAL	SURETY
_____	_____
BY_____	BY_____
(SEAL)	(ATTORNEY-IN-FACT) (SEAL)
_____	
(Title)	
ATTEST: _____	ATTEST:_____